SEPTEMBER 20, 1934

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

COMING!

ANOTHER WAVE OF steel EXPANSION . . .

✓ Iron & Steel Show Section—page 111

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What do you want in the welded stainless tubing you use?

Perhaps your biggest headache is corrosion. Maybe it's oxidation, or contamination, workability, or some combination of these. Whatever it is, the solution lies in getting the *right* welded stainless tubing for your particular operation.

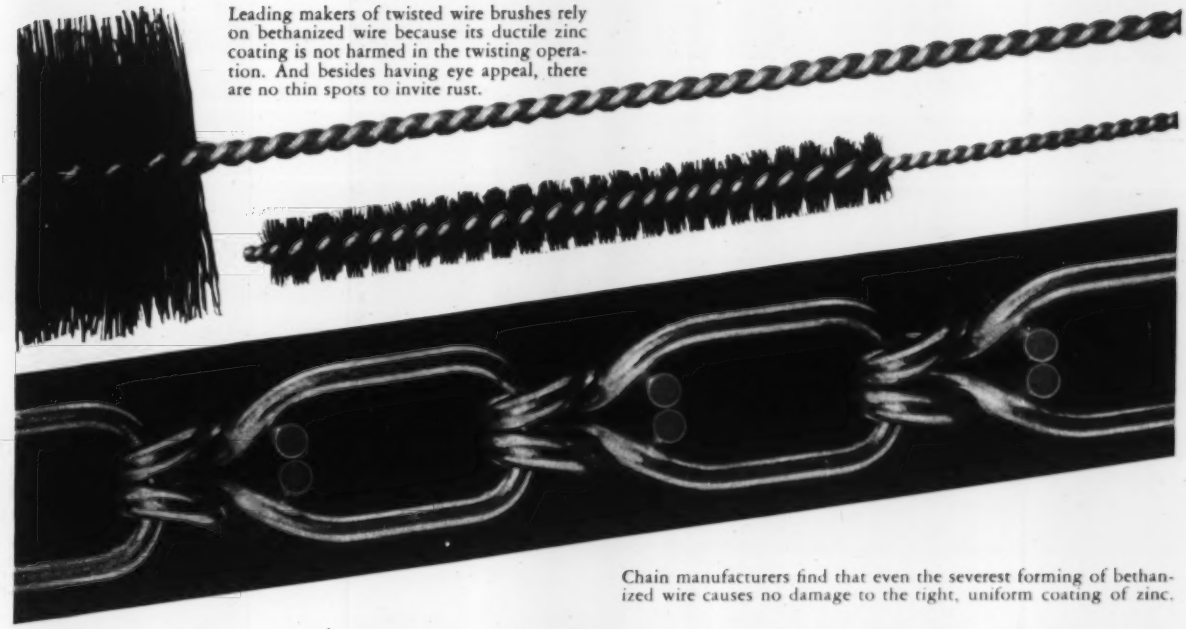
With B&W welded stainless tubing you can be sure you are getting not only the right grade of stainless steel but also tubing with the properties you desire for easy fabrication and long service life.

Put your stainless tubing problems up to Mr. Tubes, your link to B&W, who represents the B&W Headquarters Technical Staff, Regional Sales Offices, and a cross-country network of experienced tubing distributors. You can have confidence in his suggestions, based on broad and intimate experience with stainless applications, to help you make the right choice for your requirements.

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

B&W SEAMLESS and WELDED TUBES

TA-4033 (SWP)



Leading makers of twisted wire brushes rely on bethanized wire because its ductile zinc coating is not harmed in the twisting operation. And besides having eye appeal, there are no thin spots to invite rust.

Chain manufacturers find that even the severest forming of bethanized wire causes no damage to the tight, uniform coating of zinc.

Pure zinc . . . perfectly bonded to steel . . . that's bethanized wire

What sets bethanized wire apart, above any other feature, is the perfect bond between the pure zinc coating and the steel base. As the wire goes through the bethanizing process, pure zinc is electrolytically deposited on the steel, atom by atom, building up a tight, uniform protective armor.

That is why bethanized wire is hard to beat for corrosion-resistance. The zinc coating is so even that there are no thin spots where corrosion can find a foothold, and so ductile that it goes through severe forming and fabrication without damage.

The sparkle of pure zinc adds eye-appeal to wire products. Now is a good time to see what bethanized wire can do for you. Either light or heavy coating weights can be supplied in hard- or soft-temper wire. Our nearest sales office will give you complete information.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

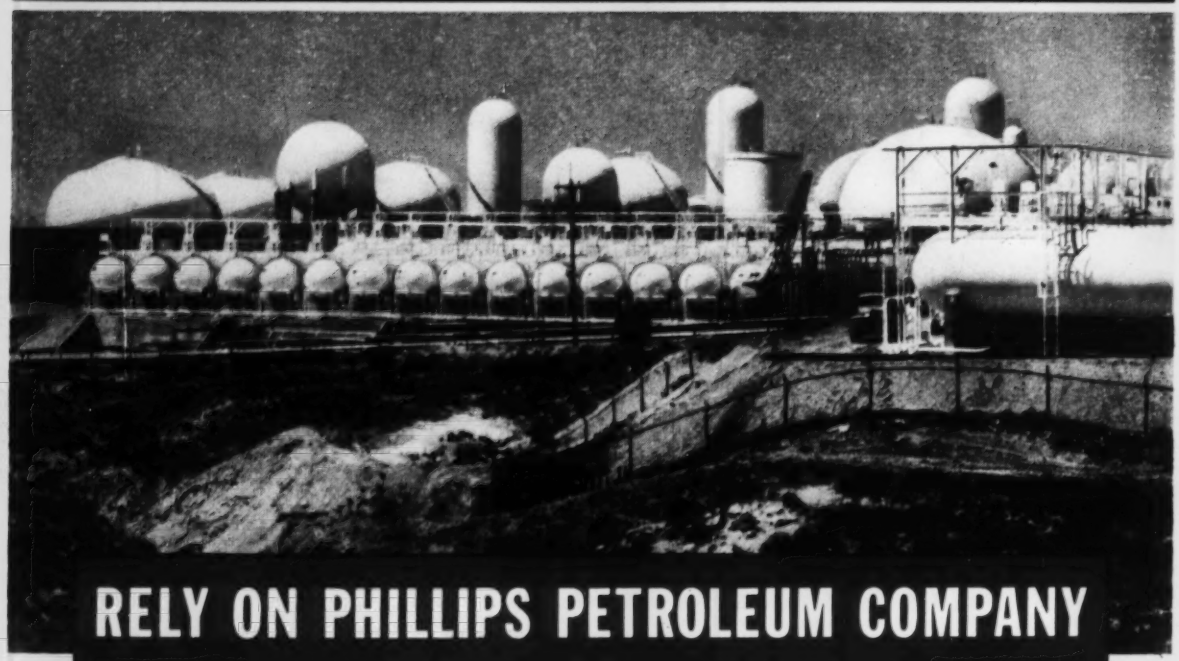
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Here's an easy way to judge bethanized wire for yourself . . . let us mail you a small sample piece. You can twist it, bend it, wrap it around its own diameter—even draw it through dies—and the ductile zinc won't crack or peel off.

Write now for your sample. Address your request to Bethlehem Steel Co., Room 1037, Bethlehem, Pa. If you want enough bethanized wire for a production test, our Sales Department will gladly make arrangements to send you a trial order of the proper gage, temper, and coating weight.

BETHLEHEM STEEL

*Philgas** IS AMERICA'S LARGEST SELLING LP-GAS



RELY ON PHILLIPS PETROLEUM COMPANY FOR DEPENDABLE SUPPLY!

Phillips tremendous manufacturing, transportation and storage facilities provide dependable supplies of Philgas when and where you need it, even in periods of peak demand. The modern processing plant pictured above is one of Phillips many installations engaged in the manufacture of Philgas. Pipelines carry Philgas to strategically situated underground storage facilities. Phillips maintains its own fleets of tank cars and trucks to insure prompt deliveries.

There is no cleaner fuel than Philgas. This quality LP-Gas is produced and processed by Phillips Petroleum Company to rigid standards of purity. It is free from harmful contaminants. You can rely on it for high thermal values, uniform gravity and pressures. In addition, the automatic features of a Philgas system keep your labor costs low.

Leading industries are using Philgas profitably for core baking, mold drying, heat treating, ceramic operations, food processing, textile finishing, space heating, metal cutting, and as a clean, economical motor fuel. Write for full information. It will pay you to find out how Philgas can cut down your operating costs . . . and how it can increase your profits.

*Philgas is the Phillips Petroleum Company trademark for its high quality propane-butane LP-Gas or bottled gas.

Philgas
THE ALL-PURPOSE FUEL

PHILLIPS PETROLEUM COMPANY

Sales Department · Bartlesville, Oklahoma

Offices located in Amarillo, Tex., Atlanta, Ga., Chicago, Ill., Denver, Colo., Des Moines, Ia., Indianapolis, Ind., Kansas City, Mo., Minneapolis, Minn., New York, N. Y., Omaha, Nebr., Raleigh, N. C., St. Louis, Mo., Tampa, Fla., Tulsa, Okla., Wichita, Kans.

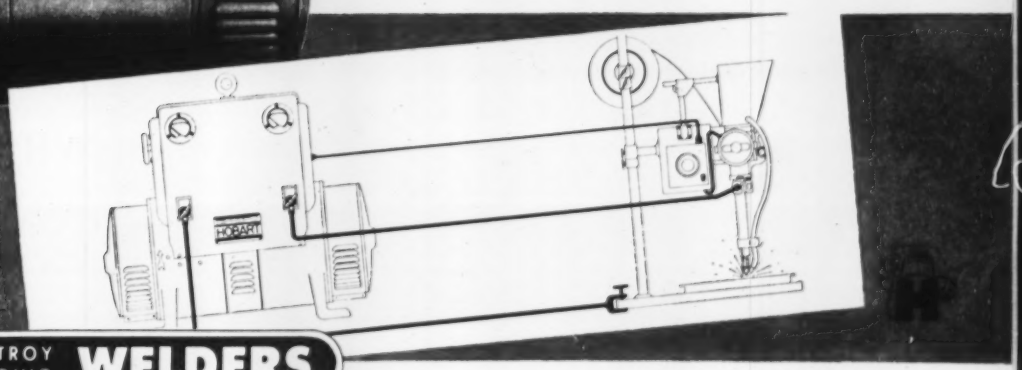
Go COMPLETELY Automatic!

Put HOBART POWROMATIC WELDERS

and Conversion Kits to work for you at once!

With a Hobart *Powromatic* welder and conversion kit you can improve your present continuous wire feed welding operations to the point where you can really call them automatic.

The *Hobart Powromatic* welder is designed to maintain a constant arc voltage at a preset value. Once the type and size of wire is established and correct arc voltage is determined, the amount of current to the arc is automatically adjusted by *Powromatic* to suit the speed of the wire feed. In doing this a simple conversion kit does away with the complicated mechanisms you now use.



HOBART TROY OHIO **WELDERS**

Contact your nearest Hobart Distributor or return this coupon for further information.

No Obligation!

HOBART BROTHERS CO., BOX ST-94, TROY, OHIO

"One of the world's largest builders of Arc Welders"

To Hobart Brothers Co., Box ST-94, Troy, Ohio, Ph. 21223

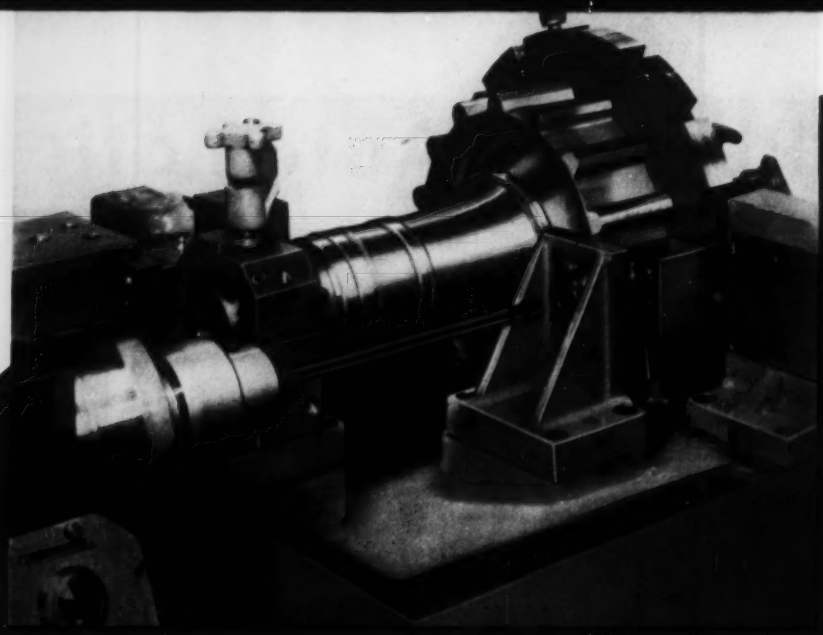
Please have your representative call and give us complete details on *Powromatic* welders and conversion kits. No obligation.

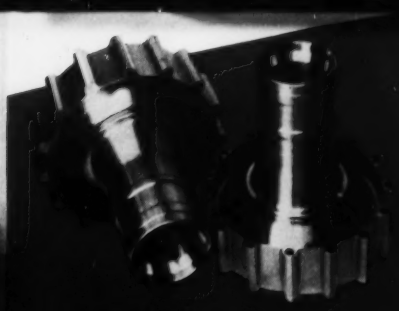
NAME _____ POSITION _____

FIRM _____

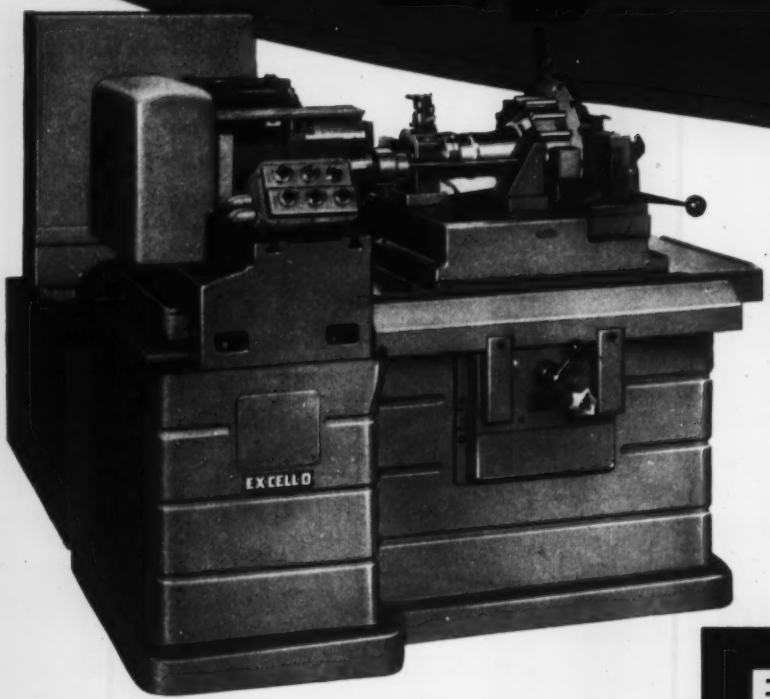
TOWN _____ STATE _____

See this revolutionary welding advancement in Space 365, National Metal Congress and Exposition, Chicago, Illinois, Nov. 1-5, 1954





EX-CELL-O ANNOUNCES BOR-DRIL



THE MODERN APPROACH WITH GUN-TYPE DRILLS

Ex-Cell-O Precision Machines are ideal for Bor-Dril machining of close-limit holes from the solid because of their smooth, easily-adjusted feeds and vibration-free construction.

EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

XLO

This Week in Metalworking

STEEL
THE WEEKLY MAGAZINE OF METALWORKING

Vol. 135 No. 12 September 20, 1954

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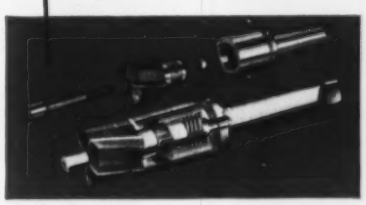
Editorial, Business Staffs—16. Advertising Index—234. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $7.50; two years $15; all other countries, one year $20. Single copies (current issues) 50 cents. Metalworking Yearbook issue $2.00. Acceptance under Sec. 34.64 P. L. & R. authorized. Copyright 1954 by Penton Publishing Co.

Continental
Counterbore Sets
Save Your Time—
Save Your Tools

A Twist of the Wrist engages or releases the cutters. Double lugs on cutter engage double abutments in holder. Double aligning bearings for rigidity.



Phantom view shows the strong, rigid drive for quick interchangeability of tools.

CONTINENTAL has three STANDARD COUNTERBORE SETS for your selection. They are toolroom favorites. WRITE FOR CATALOG and prices.

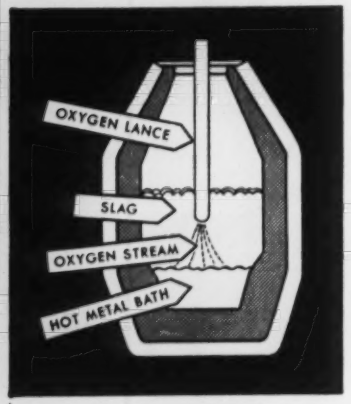
CTW

CONTINENTAL TOOL WORKS
Division of
Ex-Cell-O Corporation
Detroit 32, Michigan

(Advertisement)

what's NEW in Engineering

To cut refining costs of steel, Kaiser Engineers has acquired the exclusive U. S. rights for the Brassert Oxygen Converter Process of producing high quality steel. Recognized as an advanced development



in steelmaking, the oxygen process promises a definite saving in refining costs of at least $3.00 per ton. Investment cost is also lower, as one 35-ton oxygen converter will produce as much as three 175-ton open hearth furnaces at half the estimated capital investment. Write us for a brochure describing the process in detail.

The largest construction contract in Australia's history has been awarded to the Kaiser-Walsh-Perini-Raymond group of American contractors. With Kaiser Engineers as the project's sponsor, the group will construct a dam and mammoth 14-mile water tunnel through the Snowy Mountains of Southeast Australia.

Asme Handbook Metals Properties. This is Volume I of a four volume handbook sponsored by The Metals Engineering Handbook Board of the American Society of Mechanical Engineers. Published by McGraw-Hill, METAL PROPERTIES tabulates strength, hardness and the other properties of over 500 metals.

Whatever your immediate research, design or engineering problems, however unusual they may be, an early consultation with Kaiser Engineers is an important step toward their quick, profitable solution. Call or write Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

behind the scenes

Engineers May Go Places

Next week 5000 Iron & Steel Engineers will sail, fly, float and roll into Cleveland to attend the AISE Convention and Show. Most of these visitors will undoubtedly get some time off for good behavior, so what will they do with their idle hours? Well, 150 years ago there wasn't much to see in Cleveland except trees, rattlesnakes and a trail from Public Square to the river. As a matter of record, there were very few iron and steel engineers anywhere, either, but that has nothing to do with Cleveland as a modern sightseeing center.

Tired, hungry and thirsty engineers may find rest, food and drink in various degrees of quality and price in many established hotels, restaurants and bars throughout the city, but they can do that anywhere. What has Cleveland got to offer that is unique?

Well, there's the Cleveland Health Museum out on Euclid Avenue at East 89th St. On display is the most intimate view of a person's insides you ever saw. Makes you glad you didn't take up the profession of surgery. There are other museums, too: the Cleveland Museum of Natural History at East 27th St. on Euclid Avenue, containing, among other interesting and curious items, the remains of an elephant that died near Akron 25,000 years ago; the beautiful Cleveland Museum of Art, at 11150 East Blvd., containing contemporary puzzles as well as world-famous originals; Garfield's Monument in Lakeview Cemetery, containing the body of the 20th President of the United States; the Penton Bldg., at W. 3rd and Lakeside, containing STEEL and four sister publications. There are great churches and places like Hernando's Hideaway —colleges and bowling alleys—giant ore vessels, a string of metropolitan parks, and a view from the 700-foot Terminal Tower.

Sharpen Market Section

"All Gaul in parts three divided is," high school students will soon be mumbling again, secretly wondering if Caesar had hiccoughs in this syntax. STEEL is divided into three parts, too, but we'd lose our job if we wrote out the information in such a cockeyed fashion. STEEL is divided into three parts in the interests of clarity, and each part receives individual attention and treatment. News, Markets and Engineering are the nerve centers of metalworking, and STEEL stresses them all. In the current issue you will notice we are changing our technique of presenting market news. Basically, three changes are taking place in the market section:

1—Price tables have been spread over an additional page of space.

2—We have begun to run stories on special market situations, and to give them special art treatment.

3—Steel products reports that have run under city datelines will be combined into condensed reports.

We're trying to make the market section of STEEL more useful to a wider group of readers. To indicate some of the uses, we have inserted some suggestions at the bottom of the price index page.

Outlook For Steel Capacity

"Don't forget the marlin," a little boy cautioned us a few weeks ago as we were making snapshots of a fishing cruiser that had just docked near Myrtle Beach. How could we? It was the biggest thing in sight. We feel the same way about calling your attention to the 16-page section in this issue covering the Outlook for Steel Capacity. Managing Editor Walt Campbell drew pertinent information from the nation's steel manufacturers, and has assembled this information into a two-page introductory and interpretive article that serves as a guide to the following 14-page storehouse of steel production facts. He presents a consensus of high steel executive opinion, and an analysis of the outlook for expansion. When you whip through this 16-page special section you will be qualified to be a metalworking prophet in your own right.

Shrdlu

(Metalworking Outlook—Page 61)

MORE THAN 300 LEADING MANUFACTURERS

are already putting

SKF TYPE "C" BEARINGS

in their products

Here are the trade marks of a few of more than 300 leading manufacturers – companies who want extra bearing performance – who already are using the *improved* SKF Type "C" Spherical Roller Bearing announced less than a year ago.

There are two reasons why

First: They know that for over 40 years, SKF has been *first* with anti-friction developments that *work*.

Second: They obtain, size for size, up to 50% more capacity, 2 to 3½ times increased life with SKF's Type "C" Spherical than they can obtain with any other available design, and at no increase in cost.

7550

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA
– manufacturers of **SKF** *and* HESS-BRIGHT® *bearings.*

©1954 – SKF Industries, Inc.

SKF®
BALL AND ROLLER BEARINGS

Here's how

Many things to many men . . . that's the Houghton picture on steel mill applications.

You may know Houghton for its Hydraulic Department, where moulded packings have been made for two generations, and used by practically every steel producer. Current types include leather, synthetic rubber and the new rubber-impregnated leather (VIM 1243) that is taking industry by storm.

Or, you may know Houghton as a specialty lubricant house, fortifying petroleum oils and greases to do vastly improved lubrication jobs . . . open gears, hot spots, lube additives for water systems or for fuel oils . . . scores of items for hundreds of specialized applications.

And it is possible that your knowledge of Houghton has been based largely on its metal-working products: rust preventives, heat treating and quenching oils, cutting oils and bases, pickling inhibitors, hot top insulating materials, hot forging agents.

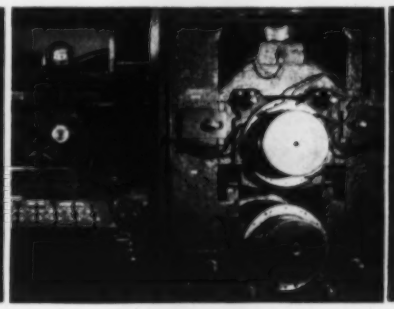
But no matter how you classify this 89-year-young Company, it is certain that Houghton products can be of aid. Behind them is a definite plus value—a field and laboratory service unequalled in our type of industry—also helpful, authoritative publications and manuals highly regarded by metal men.

Get to know Houghton better through the widely known "Houghton Line", published since 1907. If you do not now receive it, write E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia 33, Penna.

serves the STEEL INDUSTRY

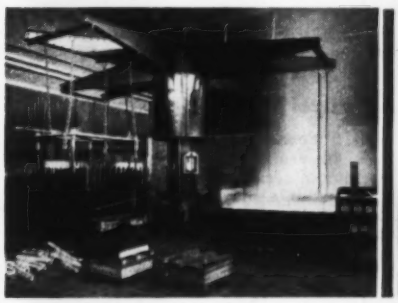
Improve Steel Processing with these Houghton Products

Houghton hydraulic fluids and lubricant additives for water systems, plus Houghton packings, add to useful press life.

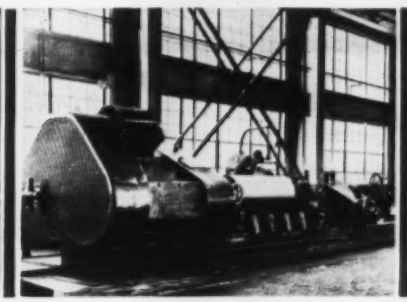


All through the mill Houghton leather and synthetic rubber packings serve long and ably . . . such as on roll jacks, above.

Hydraulic applications, such as dolomite charger above, call for Houghto-Safe nonflammable hydraulic fluid in steel mill hot spots.



Improving Pickling Acitrol pickling inhibitors help conserve both steel and acid. Houghton surface active agents, added to rinse bath, assure quicker, cleaner rinsing.



Precision Roll Grinding Houghto-Grind 50, additive for water used as grinding coolant, assures freedom from early rusting. Rust Veto coatings protect rolls in storage.

Tomorrow's Lubricants, Today Fortified lubricants specifically built for steel mill use will withstand extreme pressures, protect gear sets, function well in pressure systems. Write for special booklet.

HOUGHTON PRODUCTS ON DISPLAY AT A. I. S. E. SHOW, BOOTHS 22, 23, 54, and 55.

E. F. HOUGHTON & CO.

PHILADELPHIA · CHICAGO · DETROIT · SAN FRANCISCO

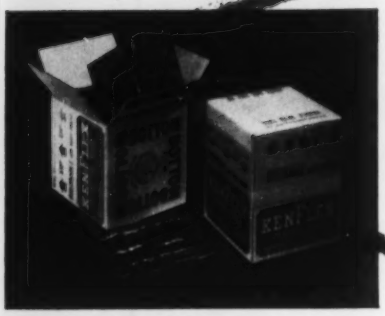
Ready to give you on-the-job service . . .

Special Coolants for Specialty Shops

Houghton Cutting Fluids have numerous applications, including above in pipe threading machine. Maximum tool life, accurate finish and low over-all cost assured when you depend on Houghton for machining aid.

ATTRACT
attention

SUBTRACT
shipping costs



COUNTERACT
damage losses

HINDE & DAUCH

Authority on Packaging

12 FACTORIES • 40 SALES OFFICES

Write for booklet,
"How To Merchandise with Corrugated Boxes."
Hinde & Dauch, Sandusky 47, Ohio

LETTERS
TO THE EDITORS

Interest in Heat Treating

I have been reading STEEL's series on modern heat treating with a great deal of interest. In farm machinery as well as other machinery, we do a great deal of heat treating and the current series offers many new thoughts to us.

I personally would like tear sheets of the entire series. I would like to suggest binding the entire series upon completion and selling it as a package unit.

C. C. Mathias
metallurgist
New Holland Machine Division
Sperry Corp.
New Holland, Pa.

Will your series on modern heat treating be reprinted in booklet form? There is much interest in the subject here.

F. M. Weitlauf
Timken Roller Bearing Co.
Canton, O.

We are following your series on modern heat treating with interest . . .

A. T. Smarcan
welding engineer
Worthington Corp.
Harrison, N. J.

• *Consideration is being given reprinting the series in booklet form.—ED.*

Adhesive Story Sticks Out

As adhesives manufacturers for well over 40 years, it is rare indeed that we find an occasion to write an "orchid" letter about a magazine article devoted to our field. For some reason, it seems that the adhesives industry is rarely covered adequately in the industrial press.

Your article, "Adhesives Join the Assembly Line" (July 26, p. 88), is a heartwarming exception to this and we wish to offer our sincere congratulations on a job extremely well done.

Bernard Gould
Rubber & Asbestos Corp.
Bloomfield, N. J.

Management Series Rolls On

I have been reading with interest your articles in STEEL's 1954 Program for Management. I believe they are well written and informative.

F. W. Connine, engineer
Building Panel Division
Detroit Steel Products Co.
Buffalo

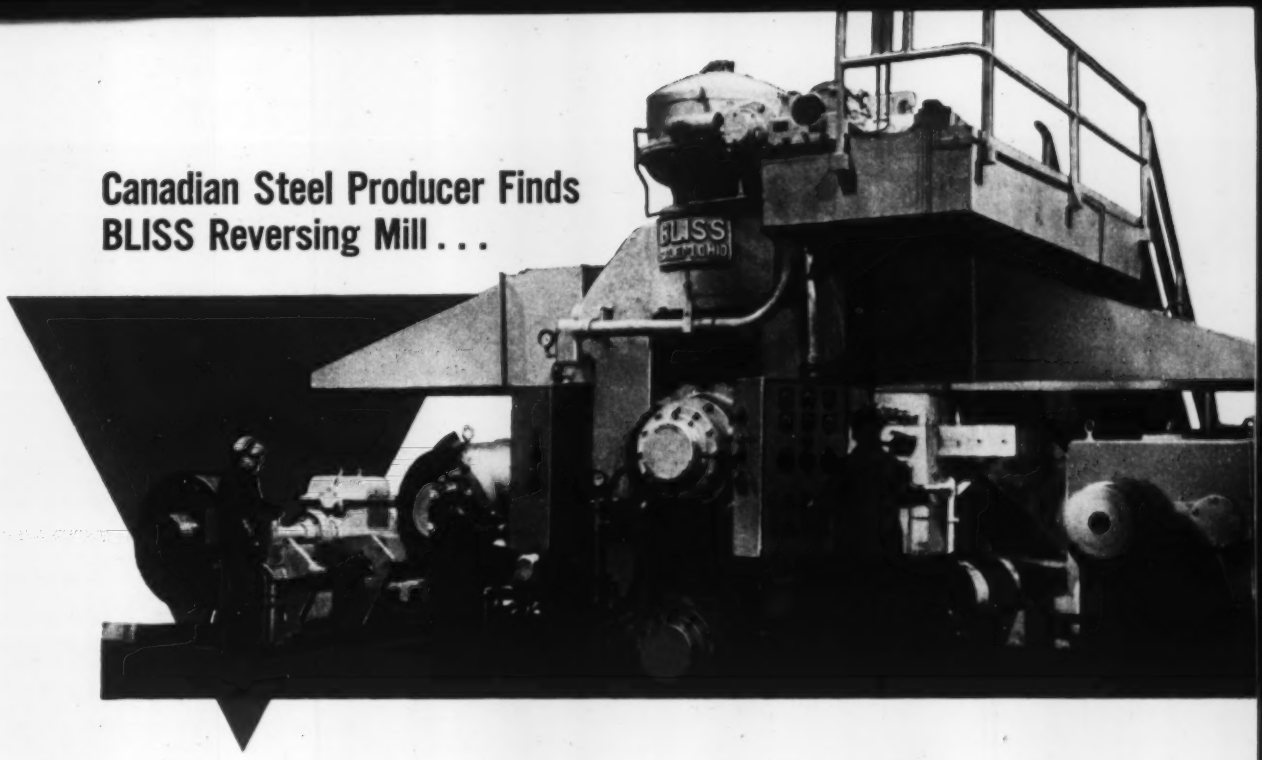
I have found these articles are of tremendous value to our sales people. Your willingness to furnish copies is much appreciated.

Gladstone C. Hill
assistant manager of sales
District Sales Office
U. S. Steel Corp.
Indianapolis

Traffic men the nation over are going to bless you folks for your 1954 Program for Management article,

(Please turn to page 12)

Canadian Steel Producer Finds BLISS Reversing Mill . . .



A mill designed and built for **RUGGED** service

Severe, short run work is the norm here; quick changeover a must. On one schedule, this mill may be rolling stainless steel; on another, mild, high carbon or silicon steel. And doing it all to standards that match our American standards in every way.

Because it was especially designed for the job, this Bliss four-high reversing mill takes the changing requirements in stride: it will roll steel . . . up to 26 inches wide . . . down to 0.010-inch gage at speeds up to 1840 fpm.

Heavy housing posts, rolls and bearings make the mill suited to any job. Valuable time is saved by taking heavier reductions per pass . . . by the ability to discharge coils at either end of the mill. Latest material handling equipment makes for safe handling during operation and changeover.

In addition, this mill features a mandrel-type payoff reel which controls back tension and strip centering to compensate for telescoped coils coming to the mill.

This four-high mill, and the *two-high temper mill shown below*, are typical results of close cooperation between mill operators with a problem and Bliss rolling mill engineers. Let these specialists help you with your problem. Learn how Bliss has helped others; write today for Catalog No. 40-A.

BLISS
SINCE 1857

E. W. BLISS Company, General Office: Canton, Ohio
ROLLING MILL DIVISION: SALEM, OHIO

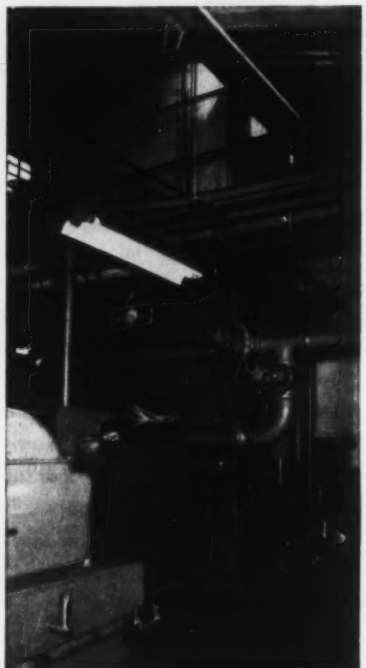
Remember: BLISS for Presses, ROLLING MILLS, Special Machinery

You Get Trustworthy Liquid or Gas Cooling With Great Cooling Water Savings from the NIAGARA AERO HEAT EXCHANGER

● You can cool air, gas, water, oils, chemicals, electric and power and process equipment, engines, mechanical processes with lower cost and really accurate control of temperature with the Niagara Aero Heat Exchanger.

You are assured of uniform, constant production and quality from any process . . . steady, reliable operation . . . lower cost for more dependable cooling. You can have closed system cooling with freedom from scale, dirt, corrosion and maintenance troubles. You can accurately cool more than one type of liquid with one machine.

The Niagara Aero Heat Exchanger uses atmospheric air to cool liquids and gases by evaporative cooling. You can remove heat at the rate of input to keep accurate control of gas or liquid temperature. You can put heat back into the system to save the losses of a "warm-up" period or to equalize the effect of load variations.



Great savings in cooling water and savings in piping, pumping and power return the cost to you quickly. The Niagara Aero Heat Exchanger can save you approximately 95% of your cooling water cost. Write for Bulletin 120.

NIAGARA BLOWER COMPANY

Over 35 Years Service in Industrial Air Engineering

Dept. S, 405 Lexington Ave. New York 17, N. Y.

Experienced District Engineers in all Principal Cities of U.S. and Canada

LETTERS

(Concluded from page 10)

"Transportation in Distribution" (Aug. 23, p. 89).

. . . one of the finest contributions that journalism has ever made toward explaining the function and potential of a traffic manager.

You are to be congratulated.

E. F. Mitchell
traffic manager
National Motor Bearing Co. Inc.
Redwood City, Calif.

. . . we were particularly interested in that section of your article, "Transportation in Distribution," devoted to the public warehousing industry and feel that the coverage was most interesting and informative So we might acquaint our Business and Industry Promotion Committee with this article, I would appreciate receiving ten additional copies.

Allen D. Walters
assistant executive secretary
Merchandise Division
American Warehouseman's Association
Chicago

Spotting the Associations

We have noticed with interest the article, "Manufacturers' Agents Help Hold the Line in Selling Costs" (Aug. 30, p. 32). We wish to know the address of the Manufacturers' Agents National Association, mentioned in that article.

Robert J. Collins
Miller & Collins
Lancaster, N. Y.

● *It's Manufacturers' Agents National Association, P. O. Box 428, 1849 W. Main St., Alhambra, Calif.—ED.*

Can you give us the mailing address of the National Metal Trades Association and the Pressed Metals Institute? We also would appreciate the name and address of any other organizations pertaining to the metalworking field in the areas of job evaluation and sales representatives' contracts.

W. W. Sprague
Danby Mfg. Co.
Portland, Mich.

● *Address of the National Metal Trades Association is 122 S. Michigan Ave., Chicago 3; the Pressed Metals Institute is at 2860 E. 130th St., Cleveland 20. Help on sales representatives' contracts may be obtained from the Manufacturers' Agents National Association, Alhambra, Calif.—ED.*

Commuter's Fare

. . . of the 16 trade publications that cross my desk, STEEL is the only one I take the trouble to carry in my briefcase to study while commuting. Please send two tear sheets of your article, "How To Reduce Selling Costs Without Scuttling Your Sales Program" (Aug. 16, p. 65).

A. W. Swift
Engineering Division
Handy & Harman
New York

● *Sent.—ED.*

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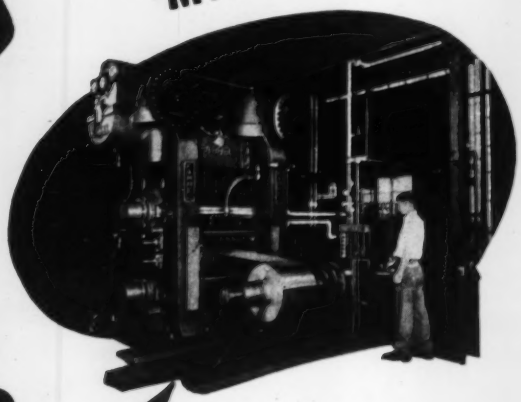

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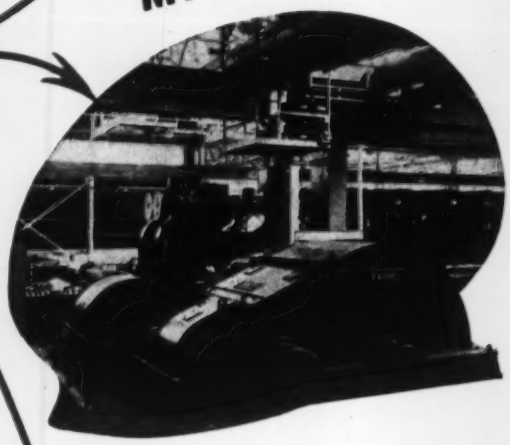

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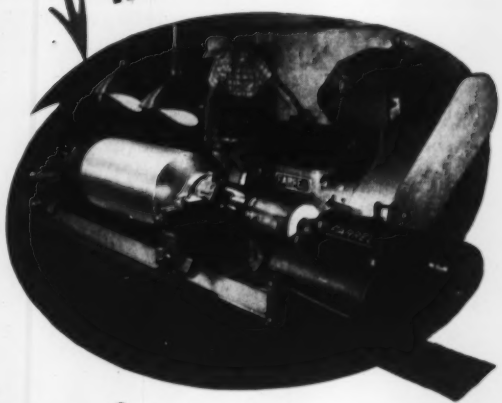

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FARREL MILLS are built in a wide range of sizes for rolling nonferrous rods, strips or sheets, metal foils and cold strip steel. Farrel also designs and manufactures coilers and special handling equipment required to make each installation a complete production unit.

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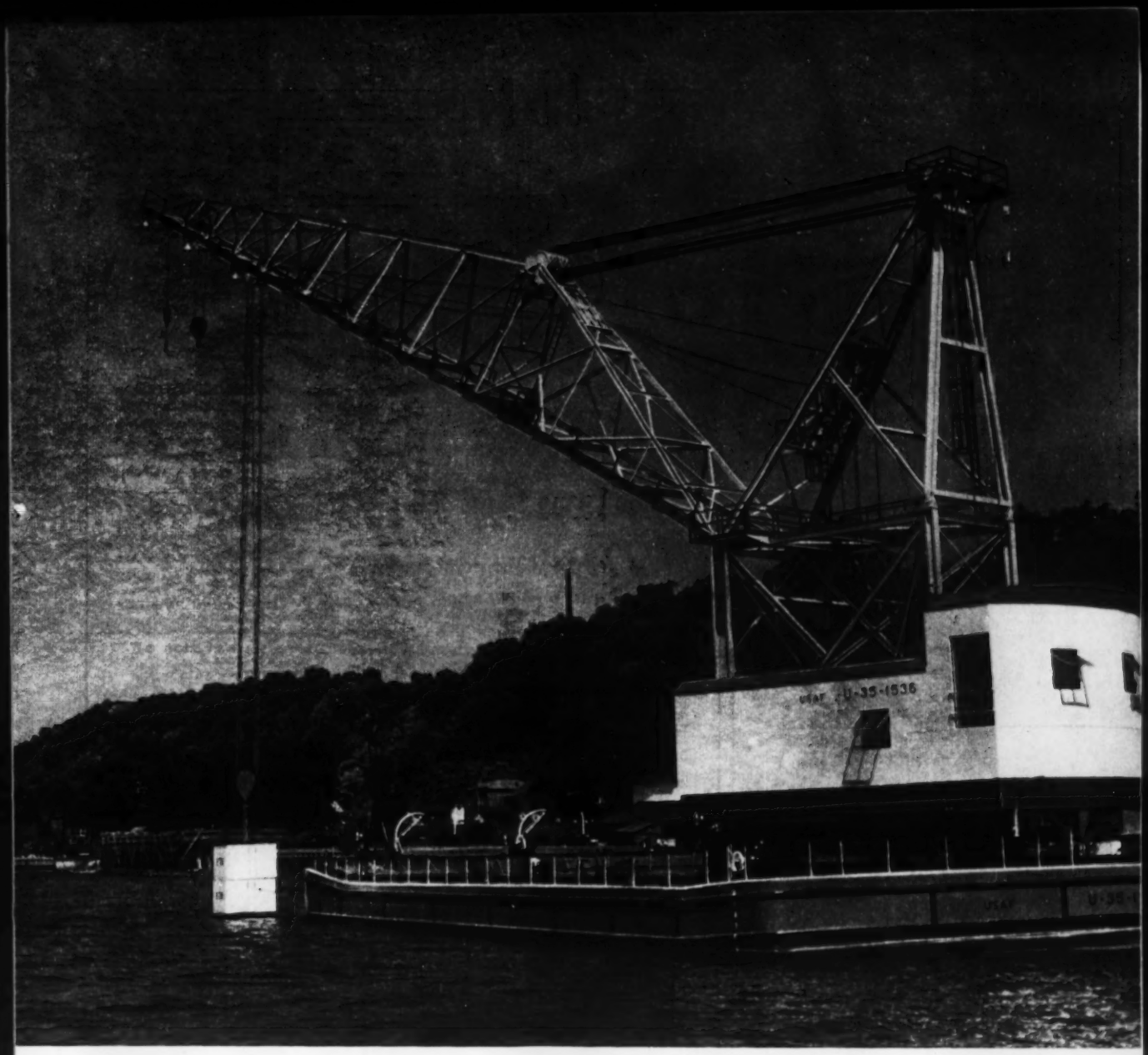

Big new weight-lifter signs up with Air Force

Biggest crane ever built for the U.S. Air Force is this floating heavyweight with a 50-ton design capacity.

Shown here flexing its muscles on a 56-ton load at 115 ft. radius during performance trials, it towers 100 feet high, has 145-foot boom. It's one of six floating cranes designed and built by Barium's Wiley Manufacturing Co., Port Deposit, Md., under supervision of the Navy's Bureau of Yards and Docks.

Point we'd like to make, though, is the way four separate Barium companies meshed operations to produce this job. Steel plate was supplied by Central Iron & Steel, Harrisburg, Pa.; structurals came from Phoenix Iron & Steel, Phoenixville, Pa.; forged shafts were turned out by Industrial Forge & Steel in Canton, O.; while Wiley engineered, fabricated and constructed both crane and 144-ft. barge.

That's spelling out in detail what we mean by Barium's "integrated operations". It means a lot on the policy level, of course, but it really pays off for Barium's customers down on the level where things get done. Not all our customers order giant floating cranes, we'll admit, but you get the same kind of service from this 16-company team whether you buy tiny springs or railroad bridges.

Remember—to Barium your *entire* order is important. No danger of any component being delayed—Barium keeps a sharp eye on all processing. This means faster handling, less paper work, and pinpointed responsibility. "The Barium Story" fills in details. Write for a copy. BARIUM STEEL CORPORATION, 25 Broad St., New York City 4.

16 INTEGRATED COMPANIES
BARIUM
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why not get these
SAFE, UNBREAKABLE
high speed blades
from your STAR Distributor?

For over 75 years, industry has *known* STAR Hand and Power Hacksaw Blades as *quality* blades.

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"Samples from the Furnaces." Agnes Potter Lowrie, famed artist daughter of a noted steelmaker, portrays a closeup of familiar objects at testing time: the protective blue glasses through which old-timers visually estimated temperatures; the slag spoon and mold for physical and chemical control of steel quality. Limited edition of 15 x 18 color prints available soon. Complimentary copy on request.

The Fine Art of Steel Making #III

Why, during World War II, were American steel makers with the greatest production capacity in the world fearful of shutdowns?

The Achilles Heel of the industry was palm oil. Then considered the essential lubricant for cold rolling tin plate, palm oil was obtainable only from foreign sources and had to be shipped halfway around the world.

That this danger has now been eliminated is due to the ingenuity of American research coupled with the readiness of steelmen to adopt new and better products and processes.

Almost 3 years ago Ironsides announced Palmoshield as the first domestic replacement for imported palm oil. Within six months two-thirds of our major tin plate mills were using or testing it, often with remarkable results. For example, one company stepped up production 15% with no additional investment, no increase in labor, and no change in mill operation.

Recognized as today's most significant advance in lubrication, Palmoshield offers five distinct advantages:

1. Produced in the heart of the steel industry. Users need not stockpile.
2. Made from freely available domestic materials.
3. Subject to exact chemical control—free fatty acid content to within ½%.
4. Price is not artificial, but fluctuates freely with the domestic fat market.
5. Proved in production to deliver increased tonnage at less cost.

Ironsides research, which developed Palmoshield, is now geared to the future. A flexible team—the "custom tailors" of lubrication—Ironsides engineers are available for technical assistance on special problems of any nature or size. A letter will summon them without obligation. Address The Ironsides Company, Columbus 16, Ohio.

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Combine in Palouse Wheat Fields — FPG Photo

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Not too many years ago farming was an occupation of long hours, physical brawn and animal power. Today, however, thanks to mechanical tools and implements, the job of those engaged in agriculture is more productive with less effort and time. This enables the farmers, by and large, to enjoy today's high standard of living and modern conveniences.

Manufacturers of trucks, cultivators, tractors, sprayers, thrashers, spreaders and reapers, just to mention a few, recognize that modern methods and procedures using *Modern Machine Tools* enable them to provide the farmer with these labor-saving, time-saving implements at lowest cost — another example of "The Invisible Background of Industrial Progress."

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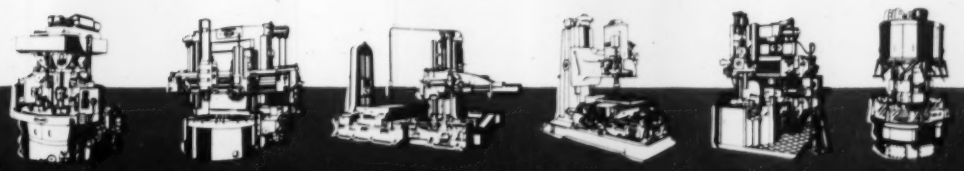
Type "D"–8"–12"–16" with 6 or 8 Spindles, Type "D" 16–23 and Type "K" 6 Spindles and 6 twin Spindles, 8 Spindles and 8 twin Spindles.

Are you interested in reliability and flexibility of the machine tools in your plant? Then examine your needs in the light of the experience of a nationally known manufacturer and user of Mult-Au-Matics. Here is what they report on Bullard Mult-Au-Matics:

Reliability — Machines operating 24 hours a day, 5 days a week. Four other departments depend on parts machined on Bullard Mult-Au-Matics to maintain their production schedules.

Flexibility — Machine a wide range of parts including gears, carriers and nozzles of a great variety of materials up to 365 Brinnell hardness. Do in one fast machining cycle what may require two or three longer operations on a horizontal turret lathe.

These productive, time-saving, cost-reducing features can be applied to your machining problems. A Bullard Sales Engineer will cheerfully review them with you — call him or write to The Bullard Company, Bridgeport 2, Connecticut — phone EDison 6-2511.



BULLARD

COLONIAL STORES HEADQUARTERS in Atlanta is the hub of the largest food chain in the Southeast

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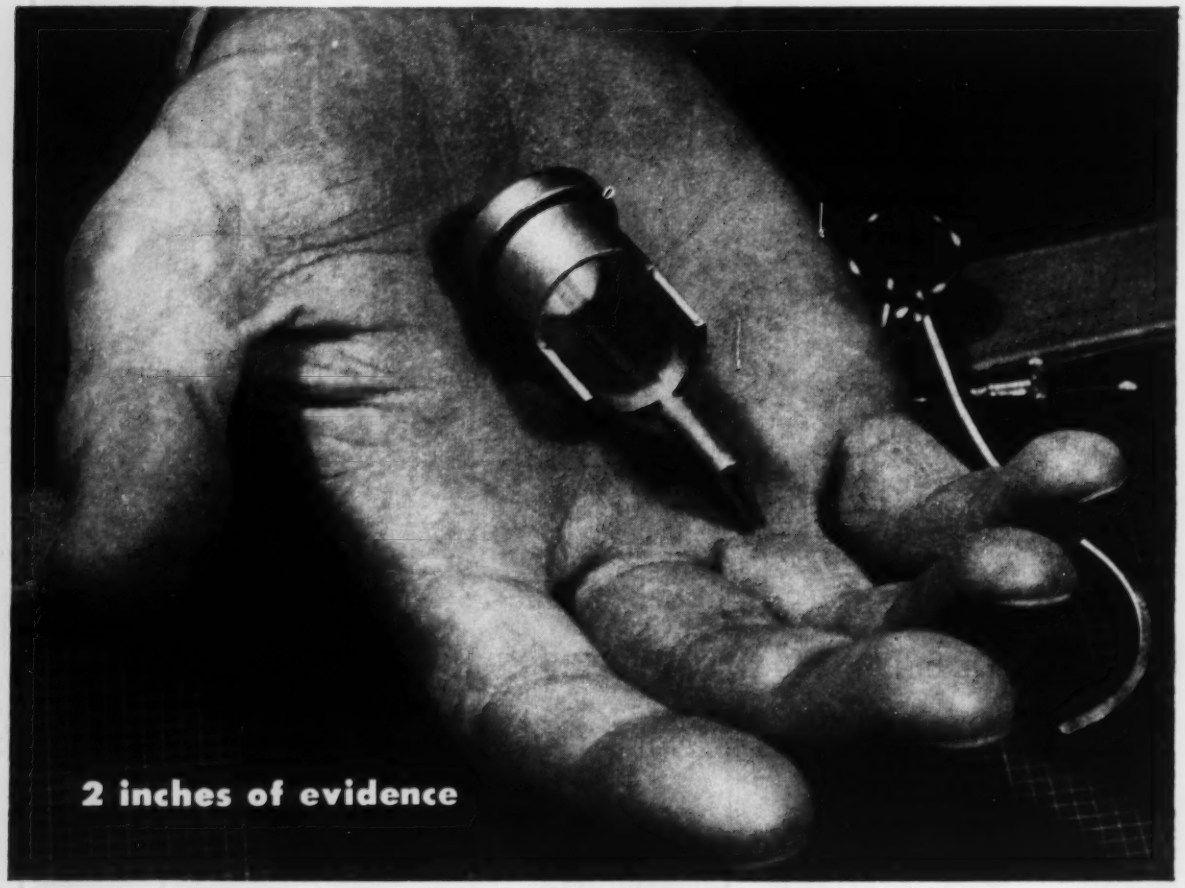

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In the Carpenter mill a length of ⅝" I.D. tubing was selected at random. A 2¼" length was cut from one end. ¼" of this sample was then turned back upon itself. Properly spaced saw cuts were made at the other end of the sample and the defined area folded bookwise with the tube weld at the point of the fold.

You can see the result pictured above. There are no cracks or splits at the rolled end. No trace of failure can be detected where the sample was folded at the weld.

What does this mean to you?

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It means, too, that if you are fabricating parts from stainless tubing, buying Carpenter is an easy way to insure trouble-free production even when severe working is required.

In short, there's a real difference in stainless tubing and Carpenter makes that difference. Why not examine the evidence yourself, in your own shop? Contact your Carpenter Distributor or nearest Carpenter Representative—he'll have one of these "reverse bend" samples to show you—can give you complete information on Carpenter Stainless Tubing and Pipe.

Here's information you can use. The new Carpenter Condensed Data File is packed with facts on corrosion resistance, weights, dimensions, forming and fabricating, analyses, etc. For your copy, write:

The Carpenter Steel Company, Alloy Tube Division, Union, N. J.
Export Dept.: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEELCO"

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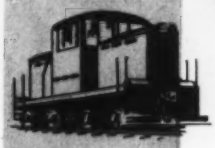
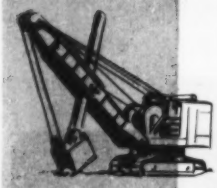
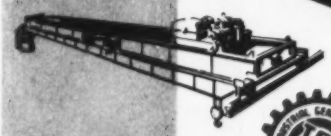
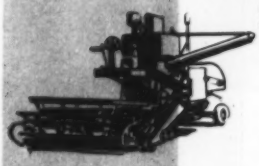
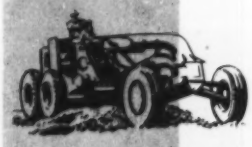
We Serve All Industry











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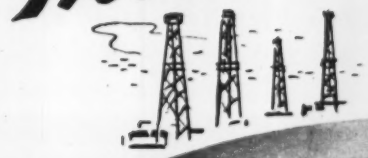
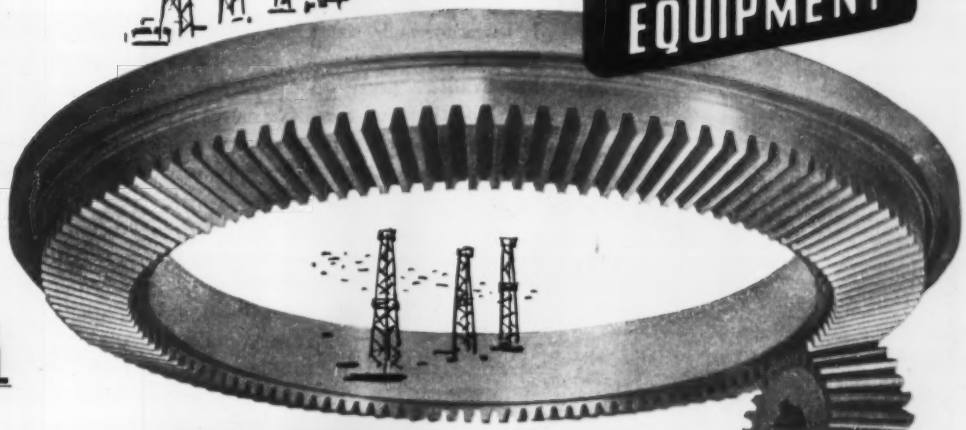
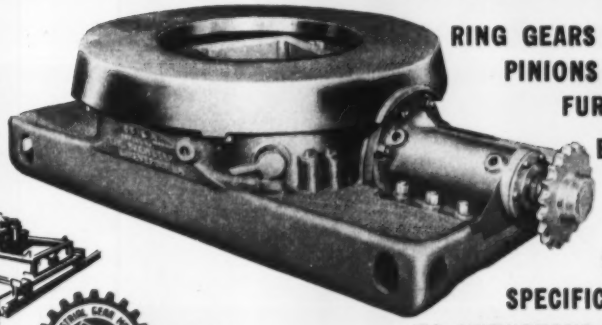
BREWSTER DRILLING EQUIPMENT







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IG GEARS — DUROCASE GEARS

Our fully equipped plant can be seen pictorially through our Bulletin No. 152-A. Write for it today.

No easy task drilling through rock, shale, salt and other formations in search of oil. The equipment must be rugged to withstand heavy service requirements.

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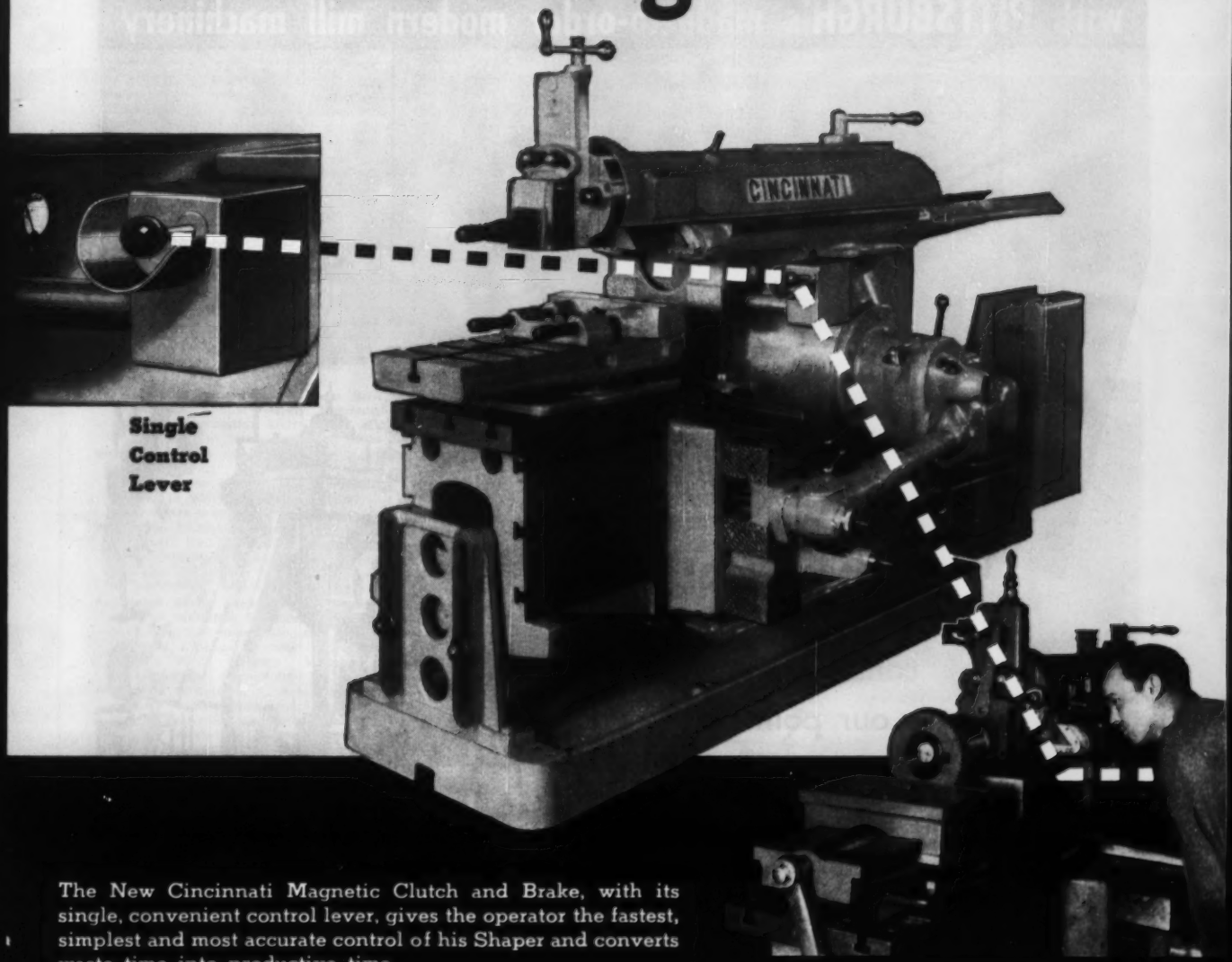
Yes, the *solid base* of several quality car-mirrors is *Bristol Brass* which gives the manufacturer uniform *working* qualities . . . and gives the user uniform *lasting* qualities. And *you* . . . whether you make mirrors or magnetos, or any other product that can profit by using Brass . . . make sure you get *Brass at Its Best* . . . which means Brass strip, rod, and wire from the modern mills here in Bristol.

THE BRISTOL BRASS CORPORATION

has been making Brass strip, rod and wire here in Bristol, Connecticut since 1850, and has offices and warehouses in Albany, Boston, Buffalo, Chicago, Cleveland, Detroit, Milwaukee, New York, Philadelphia, Providence, Rochester, Syracuse. The Bristol Brass Corporation of California, 1217 East 6th St., Los Angeles 21. The Bristol Brass Corporation of Ohio, 1607 Broadway, Dayton.

"Bristol-Fashion" means **Brass at its Best**

Outstanding Time Saver...
...Outstanding ACCURACY



Single Control Lever

The New Cincinnati Magnetic Clutch and Brake, with its single, convenient control lever, gives the operator the fastest, simplest and most accurate control of his Shaper and converts waste time into productive time.

This powerful clutch and brake requires no adjustment, and has a long, maintenance-free life.

Write for Cincinnati Shaper Catalog N-6.

30% Time Saving

Shaping time on 7 internal oil grooves in these steel sleeves was reduced from 12.5 minutes to 8 minutes, by the Cincinnati Electro-Magnetic Clutch and Brake.

CINCINNATI

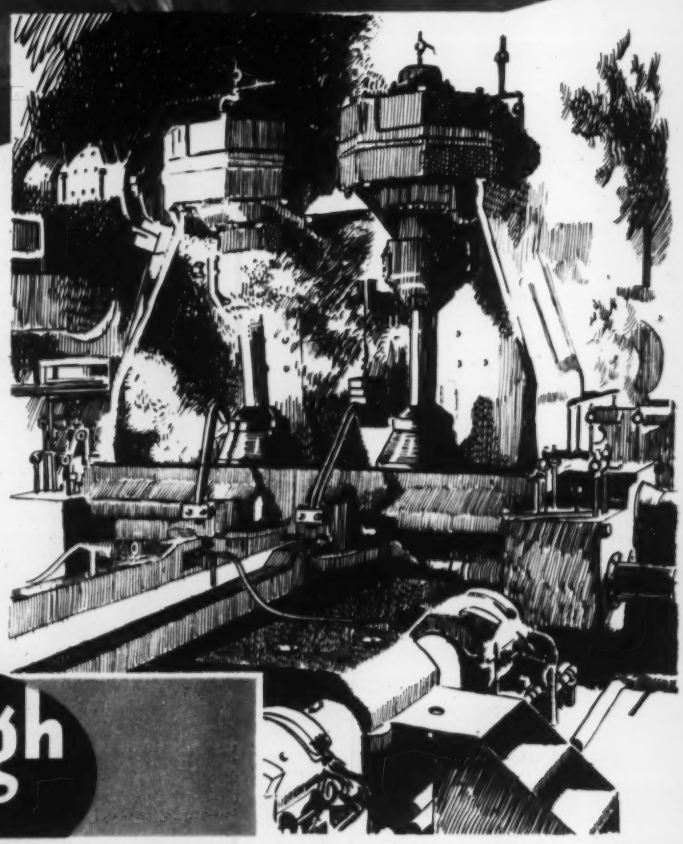
THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

Cut Costs

with PITTSBURGH's made-to-order modern mill machinery

This evidence of design and construction proves our point. May we serve you?



pittsburgh
ENGINEERING & MACHINE CO.

Mailing address: Box 986 Pittsburgh 30, Pa. • Plant at Glassport, Pa.

DIVISION OF PITTSBURGH STEEL FOUNDRY CORP.

CALENDAR
OF MEETINGS

September 20-22, Truck Body and Equipment Association Inc.: Annual meeting and exposition, Hotel Statler, Buffalo. Association address: 1616 K St. N.W., Washington 6. Executive manager: Arthur H. Nuesse.

September 20-24, American Mining Congress: Mining convention and exposition, Civic Auditorium, San Francisco. Congress address: 1102 Ring Bldg., Washington 6. Executive vice president: Julian D. Conover.

September 21-23, Society for Experimental Stress Analysis: Annual meeting and exhibit, Bellevue-Stratford hotel, Philadelphia. Society address: P. O. Box 168, Central Square Station, Cambridge 39, Mass. Secretary-treasurer: W. M. Murray.

September 22, Cutting Tool Manufacturers Association: Fall meeting, Lochmoor Club, Detroit. Association address: 416 Penobscot Bldg., Detroit 26. Executive secretary: Martin J. Ewald.

September 22-24, National Industrial Conference Board: General session for all associates on marketing, Waldorf-Astoria hotel, New York. Board address: 247 Park Ave., New York 17. Secretary: Herbert S. Briggs.

September 22-24, Industrial Truck Association: Fall meeting, Skytop Lodge, Skytop, Pa. Association address: 526 Washington Loan & Trust Bldg., Washington 4. Managing director: Wm. Van C. Brandt.

September 22-25, National Association of Foremen: Annual meeting, Hotel Sheraton Gibson, Cincinnati. Association address: 321 W. First St., Dayton 2. Secretary: Jean B. Adams.

September 23-25, Automotive Parts Rebuilders Association: Annual meeting, Morrison hotel, Chicago. Association address: 200 S. State St., Chicago 4. Secretary: Jack O'Sullivan.

September 27-28, Steel Founders' Society of America: Fall meeting, The Greenbrier, White Sulphur Springs, W. Va. Society address: 920 Midland Bldg., Cleveland 15. Executive vice president: F. Kermit Donaldson.

September 27-29, American Management Association: Fall personnel conference, Hotel Astor, New York. Association address: 330 W. 42nd St., New York 36. Vice president-secretary: James O. Rice.

September 27-30, Society of Industrial Packaging & Materials Handling Engineers: Annual exposition, competition and short course, Coliseum, Chicago. Society address: 111 W. Jackson Blvd., Chicago. Managing director: Charles J. Carney Jr.

September 28-October 1, Association of Iron & Steel Engineers: Annual convention and biennial exposition, Public Auditorium, Cleveland. Association address: 1010 Empire Bldg., Pittsburgh 22. Managing director: T. J. Ess.

September 29-October 1, Porcelain Enamel Institute Inc.: Annual meeting, Greenbrier hotel, White Sulphur Springs, W. Va. Institute address: 1346 Connecticut Ave. N. W., Washington 6. Secretary: John C. Oliver.

October 1-2, Standards Engineers Society: Annual meeting, Haddon Hall, Atlantic City, N. J. Society address: P. O. Box 281, Camden 1, N. J. Secretary: Harold J. Nugent.

October 3-5, National Association of Sheet Metal Distributors: Annual meeting, Marlborough-Blenheim hotel, Atlantic City, N. J. Association address: 1900 Arch St., Philadelphia 3. Secretary: Thomas A. Fernley Jr.

October 3-6, American Hardware Manufacturers Association: Annual meeting, Marlborough-Blenheim hotel, Atlantic City, N. J. Association address: 342 Madison Ave., New York 17. Secretary: Arthur L. Faubel.

October 3-7, Electrochemical Society Inc.: Fall meeting, Hotel Statler, Boston. Society address: 216 W. 102nd St., New York 25. Secretary: Dr. Henry B. Linford.

October 4-6, National Electronics Conference: Annual meeting and exhibit, Hotel Sherman, Chicago. Conference address: 84 E. Randolph St., Chicago 1. Executive secretary: John S. Powers.

Newport Steel

TO YOUR SPECIFICATIONS
...and WHEN YOU WANT IT

Steel you buy from Newport is constantly improving in chemical and physical characteristics. In the laboratories and through each step in the process from furnaces to finished product, its production is a precision operation on the most modern facilities, safeguarded by every known check by steelmakers of long experience. Central location and flexibility of operation help to meet delivery dates. Hauls are short and economical by rail, truck and river barge. Let us tell you more about Newport's improved facilities for serving you.

ECONOMICAL WATERAIL DELIVERY

Newport Steel is situated on the Mississippi-Ohio River system and the great Cincinnati rail hub. With the advantage of location, new river barge facilities and seven major railroads, Newport gives economical, dependable delivery to industrial areas throughout the Middle West and South.

PRODUCTS OF NEWPORT STEEL

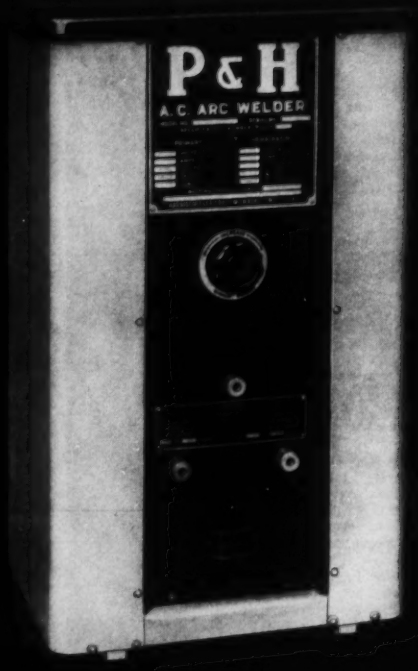
Hot-Rolled Steel in Coil
Hot-Rolled Pickled Steel in Coil
Electric Weld Line Pipe
Hot-Rolled Sheets
Galvanized Sheets
Galvannealed Sheets
Colorbond Sheets
Hot-Rolled Pickled Sheets
Electrical Sheets
Alloy Sheets and Plates
Roofing and Siding
Eave Trough and Conductor Pipe
Culverts

Newport Steel CORPORATION
NEWPORT, KENTUCKY

For Intermittent Service
You Can't Beat this Welder

You Can't Beat its Price

You Can't Beat
its Performance



New P&H TI-295 295-amp AC Welder

...the only low-cost intermittent-type welder that can handle low-hydrogen and stainless-steel electrodes

Here's a low-cost welder—with a rated load and duty cycle as follows: 295 amps, 20%; 250 amps, 30%; 200 amps, 50%.

Wide Range — You can go from 25 amps to 295 amps. You can use this machine on light-gauge material, as well as on heavy plate.

No Arc Booster — Just think — you get an open-circuit voltage of 75 volts. This means — you can weld with low-hydrogen or stainless-steel electrodes. No other welder that sells for the low price of the TI-295 can do this. Arc-striking is easier and electrode-sticking eliminated.

Exclusive P&H Dial-lectric Control — You get sound, uniform welds because all you have to do is turn a radio-like knob to get exactly the heat you need. The amperage adjustment is creep-proof too — you set the heat and it stays. Changing heat is only a matter of a second or two — a three-quarter turn of the knob is all that's required to go from minimum to maximum capacity.

No hard-to-work crank to turn. No moving parts — no moving coils or cores, no worm gears or sprockets, chain or lever adjustments. This means there's less wear, less maintenance, *less noise*—nothing to bind or "freeze" from rust.

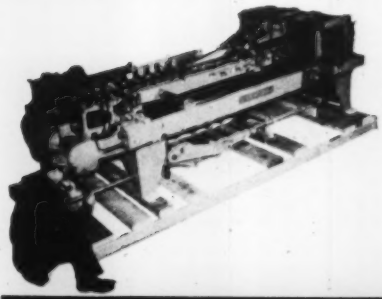
Contact your P&H representative or distributor — see how easily the new P&H TI-295 outperforms other welders in this class.

P&H WELDING DIVISION
HARNISCHFEGER CORPORATION
4411 W. National Ave., Milwaukee 46, Wis.

2599

the P&H Line

P&H Welding equipment is manufactured and sold in Canada by
REGENT EQUIPMENT MANUFACTURING COMPANY LTD. • 455 King Street West • Toronto, Ontario, Canada



$7000.00 machine protected for only $5.42

...because Angier VPI stops rust *without* slushing!

Just wrap it in Angier VPI and crate it! It's that easy these days to protect a $7000 machine for export.

That paper you see wrapped around the machine gives off a vapor that positively prevents corrosion. It costs only $5.42 — *yet, see what it saves:*

Machines used to be oil-sprayed . . . a messy operation that covered everything in the shop, including workmen. Now, with VPI, oil-spraying is not necessary. So, packaging time and labor are cut 50%. What's more, this clean, efficient method eliminates a real fire hazard.

Once delivered, time and labor are saved again because there's no degreasing to do. The machine arrives "factory-fresh". Isn't this a sales advantage for you!

What is your preservation problem? Angier, most experienced name in vapor rust preventives, can help you, too. You'll get unmatched service from our experienced engineers and from the Angier franchised distributor near you. Send for facts on Angier VPI* Wrap and free sample.

*®Vapor rust preventive. Angier VPI Wrap (2 gram) is made to conform to the government's specification on volatile rust inhibitors —MIL P 3420.

Exposed to humid tropics and salt water air, yet this VPI-wrapped machine was bright and clean upon arrival in Peru with no "degreasing" to do.

Angier Corporation, Framingham 8, Mass.

Protective papers for industrial, building, farm needs since 1895

Send *VPI* sample & *FACTS* as applied to

- ☐ Machinery-Industrial, Metal Working, Farm, Office, Construction.
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- ☐ Electrical Machinery, Appliances, Products.
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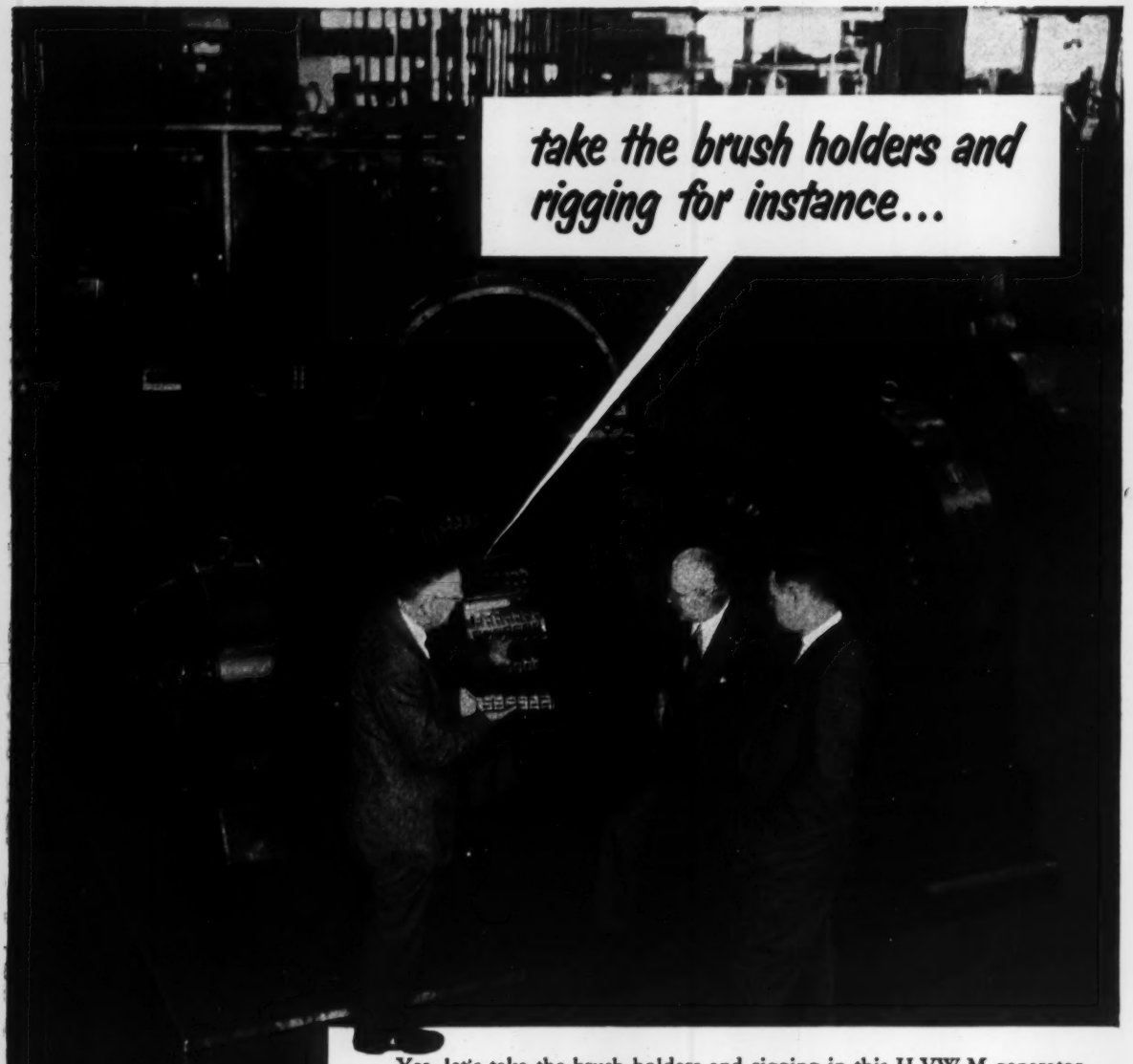
- ☐ Transportation Equipment—Aircraft, Auto, Naval, Railroad, etc.
- ☐ Others:

Name, Title (Sign and clip to letterhead)

At this low cost, you can't afford less than the best!

Angier



Yes, let's take the brush holders and rigging in this H-VW-M generator... they're fully insulated for longer life. Look, too, at the pigtail bar which eliminates current passage through springs and fingers. And the special copper graphite brushes—they give you optimum commutator efficiency. The molded "equaload" shunts distribute the brush load equally, minimizing selective action. And that's only the beginning...

All these exclusive improvements are the results of over eighty years of constant development...a continuing policy summed up in H-VW-M Platemanship—your working guarantee of the best that industry has to offer, not only in low-voltage generators, but in every phase of plating and polishing.

8336

PLATEMANSHIP

PLATEMANSHIP PLATING & POLISHING PROCESSES · EQUIPMENT · SUPPLIES

For technical information on low-voltage generators ask for Bulletin G-102.

HANSON-VAN WINKLE-MUNNING CO., MATAWAN, N. J.

Plants: Matawan, N. J. • Anderson, Ind. • Grand Rapids, Mich.

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Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

H-VW-M

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

Illustrates positive adjustment of spring compression with the "Nylok" Nut.

Republic "NYLOK"* Nuts stay tight wherever you stop wrenching

The nylon plug in the side forces the nut tight against the opposite threads as the nut is turned on. You get positive locking wherever you stop wrenching even under severe vibration. Republic "Nylok" Nuts go on easily. Either end is up. No special tools, lubricants or techniques are needed. "Nylok" Nuts can be backed-off easily, too, and can be re-used.

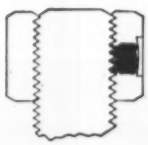
Write for samples, indicating sizes required.

12 WAYS BETTER

Assemble from either end • Can be re-used • Non-galling • Best wrenching characteristics • One-piece • Cold-forged • Won't damage threads • No special tools • Lock in any position • No special know-how • No lubricants needed • Ideal for mechanical feeding

SIZES

Finished Series tapped ¼" through 1"
Finished Thick Series tapped ¼" through ½"
Heavy Series tapped ¼" through 1"



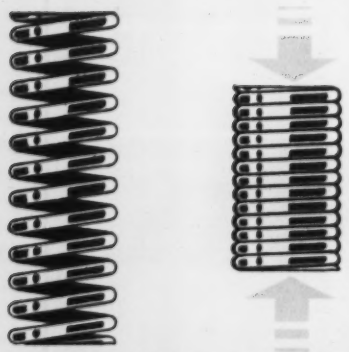
REPUBLIC STEEL CORPORATION
Bolt and Nut Division • Cleveland 13, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Bldg., New York 17, N. Y.

Here's how the "Nylok" principle works
A nylon plug inserted in one of the sides of the cold-forged nut forces the nut tightly against the opposite threads as the nut is turned on.

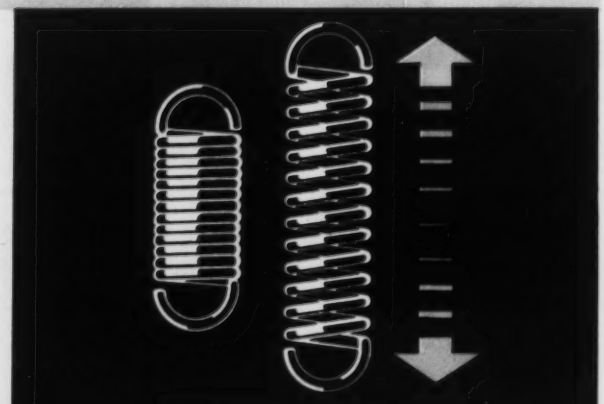
*U.S. Pat. No. 2,462,603 and No. 2,450,694 and pending applications.

REPUBLIC STEEL

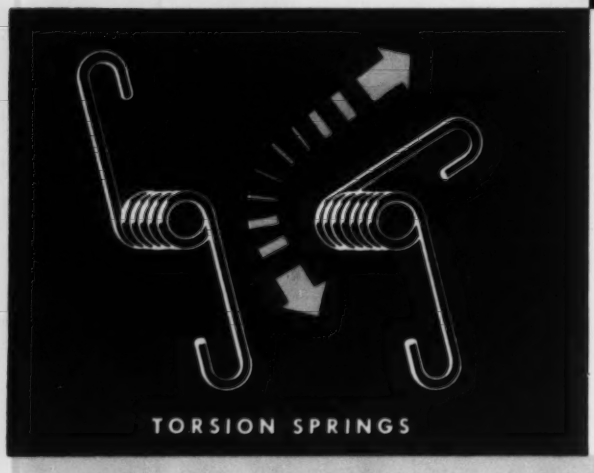
REPUBLIC BOLTS AND NUTS



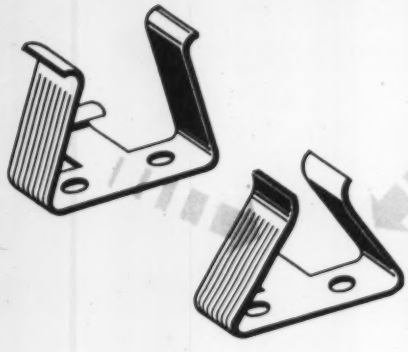
COMPRESSION SPRINGS



EXTENSION SPRINGS



TORSION SPRINGS



FLAT SPRINGS

Spring Energy in Every Direction

SEE A DIVISION OF

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10 PROVEN SOURCES COAST TO COAST

WALLACE BARNES COMPANY
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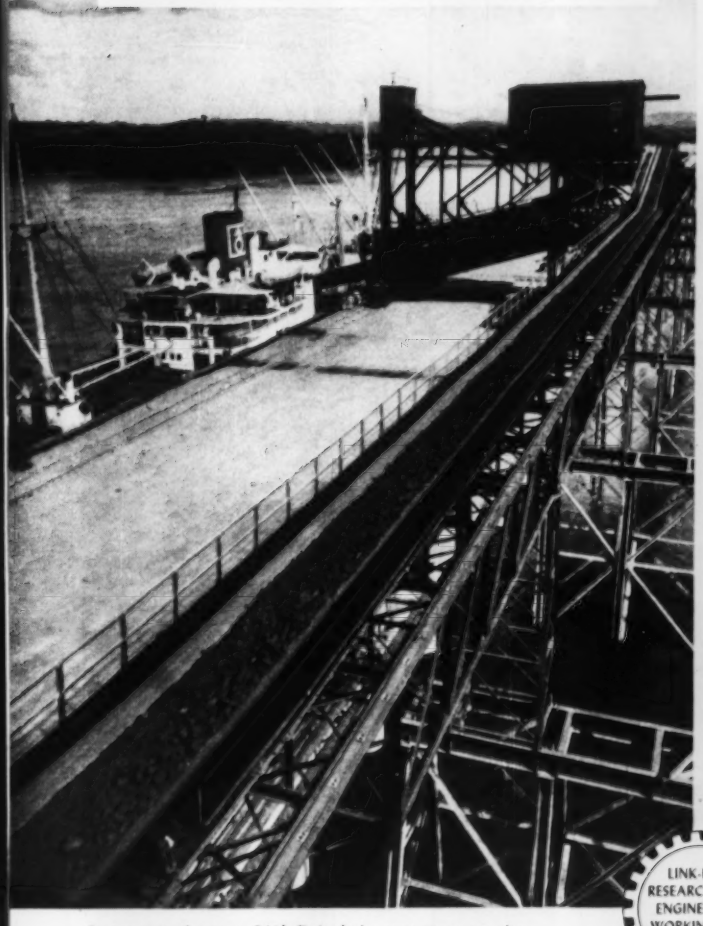
IN CANADA
The Wallace Barnes Co. Ltd.
Hamilton, Ontario

On the Orinoco...



Ore pours from a Link-Belt belt conveyor on the shiploading dock at Puerto Ordaz, Venezuela.

on the Delaware...

Coal at Fairless moves on a belt conveyor equipped with long-lived Link-Belt idlers.

LINK-BELT RESEARCH AND ENGINEERING WORKING FOR INDUSTRY

Link-Belt helps U.S. Steel make history

ON the Orinoco River in Venezuela is the largest iron ore handling system ever built at one time. It carries Cerro Bolivar's iron ore from mine car terminal to ocean-going ships at a rate of up to 6000 long tons per hour. For this giant installation, U. S. Steel's Orinoco Mining Co. selected Link-Belt as the prime contractor. The resulting system provides modern flexible, low-cost handling. For example, one man in the unloading tower controls the ore's movement all the way from stockpiles to ship.

And on the Delaware River is the largest integrated steel mill ever built at one time—U. S. Steel's new Fairless Works. At this "dream mill"—ore, coal and coke are handled on belt conveyors equipped with Link-Belt idlers and speed reducers. Elsewhere throughout the mill, Link-Belt supplied other conveying and power transmission machinery.

Whether your job is large or small, you, too, will find it profitable to rely on Link-Belt. A call to the Link-Belt office near you will place the engineering and manufacturing facilities of this nation-wide organization at your service.

LINK-BELT

13.547

One source . . . one responsibility for materials handling and power transmission machinery

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Sydney; South Africa, Springs. Representatives Throughout the World.

MAKE EVERY HEAT COUNT!

with RECARB-X® for the ladle

- **FAST CORRECTION FOR OFF-CARBON HEATS** — a convenient 50-pound bag of RECARB-X tossed into the ladle will give two points of carbon pick-up per 100-tons of steel.
- **REDUCED LADLE REACTION** — RECARB-X does not cause churning, boiling or other violent ladle reactions. It avoids oxidation of alloys and temperature losses by dissolving quickly and quietly.
- **IDEAL FOR QUALITY STEEL** — RECARB-X is consistently efficient at all carbon levels . . . effective in maintaining maximum rimming action on all high carbon rimmed heats . . . ideal for close carbon specifications.
- **HELPS THE MELTER** — RECARB-X added to the ladle will insure carbon specifications. RECARB-X gives the melter time to finish all heats to proper S, Mn, P, etc. specifications . . . and to tap at the best temperature.
- **SAFE** — no odor or flames to hurt workmen or damage equipment. Light 50-pound bag is easy to toss into the ladle.
- **ECONOMICAL** — RECARB-X is a profit-making investment. Keep your mill schedule. Put more heats into the soaking pit at exact carbon specifications. Make *every* heat count with RECARB-X.

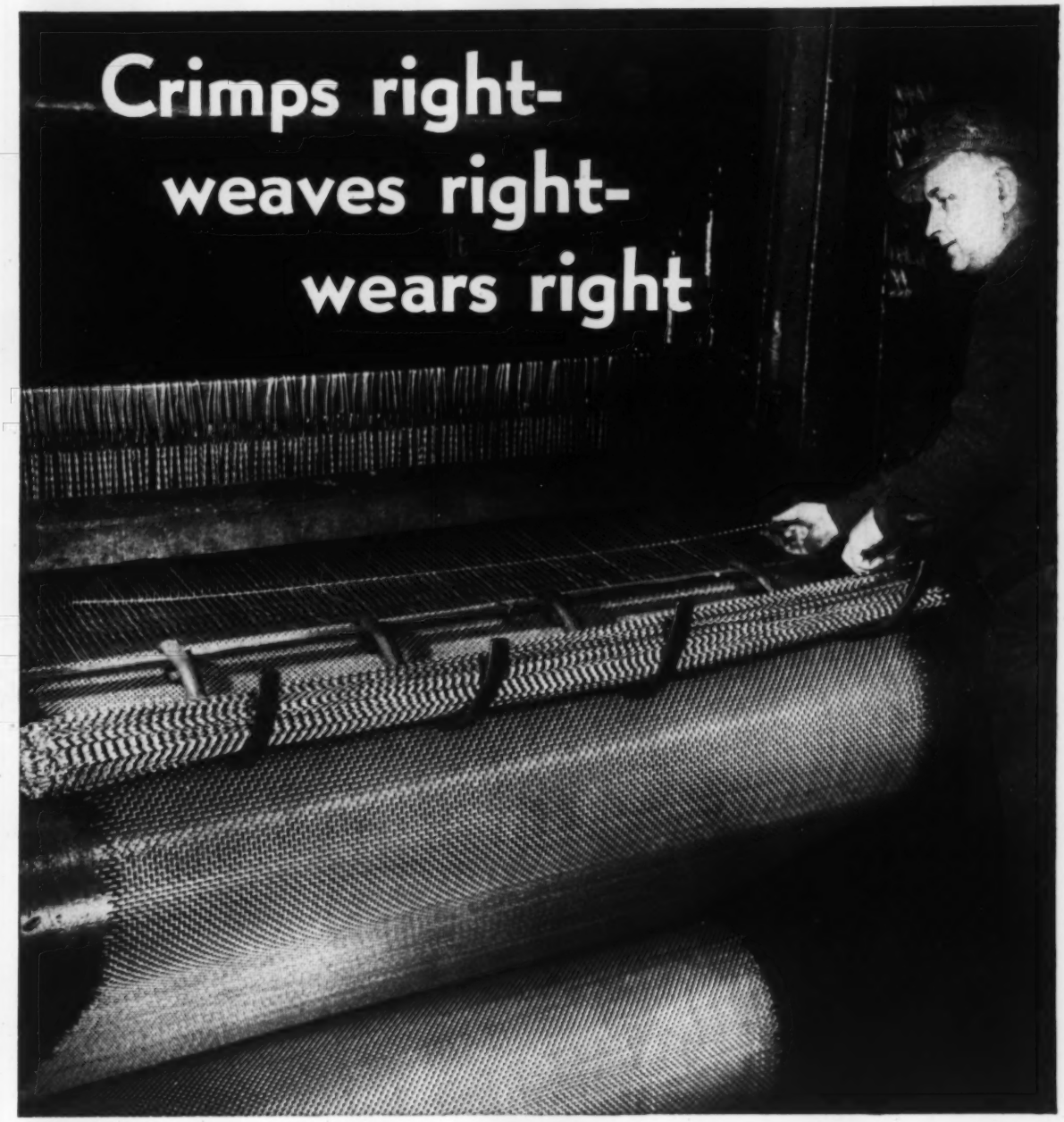
Write for the RECARB-X bulletin today. Get the full facts and arrange a test . . . we will be happy to cooperate.

190

OUR 100th YEAR

THE UNITED STATES GRAPHITE COMPANY

DIVISION OF THE WICKES CORPORATION • SAGINAW, MICHIGAN



Youngstown

HARD DRAWN WIRE — QUALITY · YOUNGSTOWN · SERVICE — ANNEALED WIRE

● To be woven into top-grade industrial screening, wire must be ductile enough to crimp uniformly, yet hard enough to give years of wear. That's why so many men who know rely on Youngstown Hard Drawn or Annealed wire for the right kind of weaving job. For further information, phone or write our nearest District Sales Office.

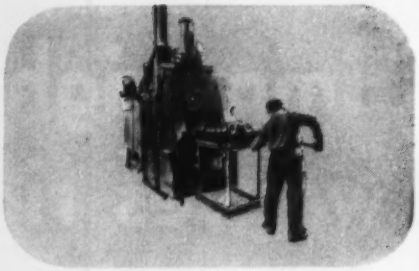
THE YOUNGSTOWN SHEET AND TUBE COMPANY Manufacturers of Carbon, Alloy and Yoloy Steel

General Offices: Youngstown, Ohio - District Sales Offices in Principal Cities

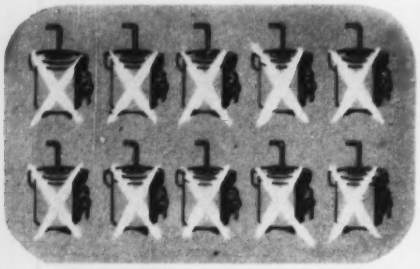
SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

"10 little cyanide pots ..and then there were none"

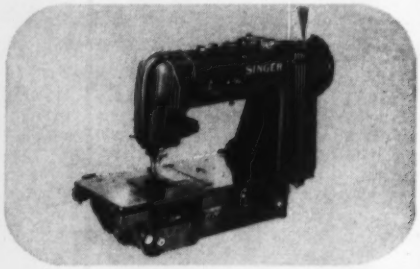
1. Featuring Singer Sewing Machines and Lindberg Carbo-nitriding Furnaces.



2. Singer Manufacturing Co. bought a new Lindberg Carbo-nitriding furnace.



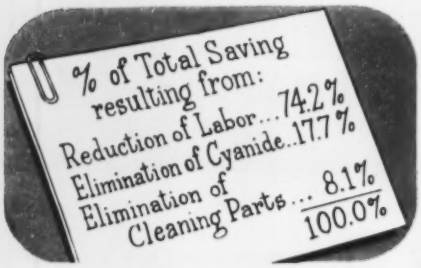
3. It replaced 10 liquid cyanide furnaces.



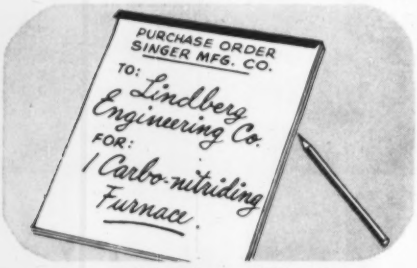
4. The new furnace heat treats parts for "industrial sewing machines"... used for stitching canvas, mattresses, overalls, etc.

5. In 12 months, the new Lindberg Carbo-nitriding furnace paid for itself in savings.

6. Mr. Lloyd R. Raymond, Supt. of heat treating at Bridgeport plant of Singer.


% of Total Saving resulting from:
Reduction of Labor... 74.2%
Elimination of Cyanide.. 17.7%
Elimination of Cleaning Parts... 8.1%
100.0%

7. . . . submitted this report to his top management.



8. . . . with this requisition for a second Lindberg Carbo-nitriding furnace (to double production of carbonitrided parts).

End of Story

LINDBERG FURNACES

LINDBERG ENGINEERING COMPANY

2441 W. Hubbard Street • Chicago 12, Illinois

It's outstanding!

EVERY MANUFACTURER who tries Roebling high carbon flat spring steel discovers the same thing... that this spring steel is absolutely unexcelled for dimensional and mechanical uniformity... for speeding production and cutting down rejects.

You always *pay* for the best when you buy flat spring steel... make sure you *get* it by specifying Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

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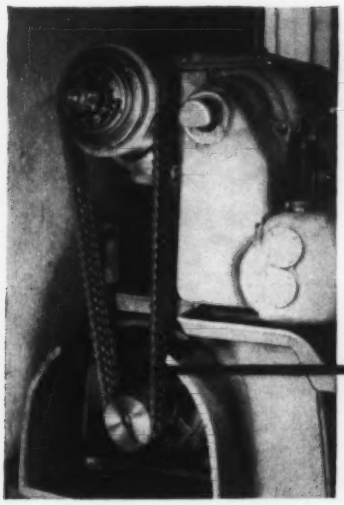
Cleveland-Cliffs back in 1911 formalized its program, on which it had been working for many years, by organizing a Safety Department and creating the position of Director of Safety. It was the first to do so. Standards of safety rules and safe practices were formulated and published and placed in the hands of every employee.

LAKE SUPERIOR IRON ORE • FERRO ALLOYS
VESSEL TRANSPORTATION • COAL

THE Cleveland-Cliffs IRON COMPANY

UNION COMMERCE BUILDING • CLEVELAND 14, OHIO



Performance Proves 20% to 90%

LESS VIBRATION

with Veelos—the Balanced V-belt

Engineers have long known that there are four principal causes of machine vibration: 1. bearings; 2. motor; 3. clutch; 4. sheaves. Often overlooked is a fifth cause: v-belts. And, in many instances, *v-belts alone* are the major cause of vibration.

There's a logical reason for this.

Regular v-belts have spots of varying density due to their construction. Normally, these spots are not apparent, yet they throw the belt out of balance when the drive is operating. As a result, vibration is created that can damage bearings, shafts and, most important, the finished work.

This is not true of Veelos v-belts.

Veelos is absolutely uniform throughout its entire length. Every link and every stud is identical. The smooth, machine-cut sides and the laminated construction assure smooth, vibrationless power delivery. Veelos is perfectly balanced.

In case after case, installation of Veelos v-belts has reduced machine vibration 20% to 90%.

Proof that Veelos will reduce vibration can easily be demonstrated with an electronic vibration analyser. This analyser measures amplitude of vibration to as low as 2-millionths of an inch.

Fifteen minutes of your time is all that is required to show you with the electronic analyser that Veelos creates less machine vibration. Drop us a line or clip the coupon for a demonstration.

VEELOS
THE LINK
V-BELT

Manheim Manufacturing & Belting Company
613 Manbel St., Manheim, Pa.

Yes, I would like a demonstration. **Have your representative call me for a convenient time.**

Name .....

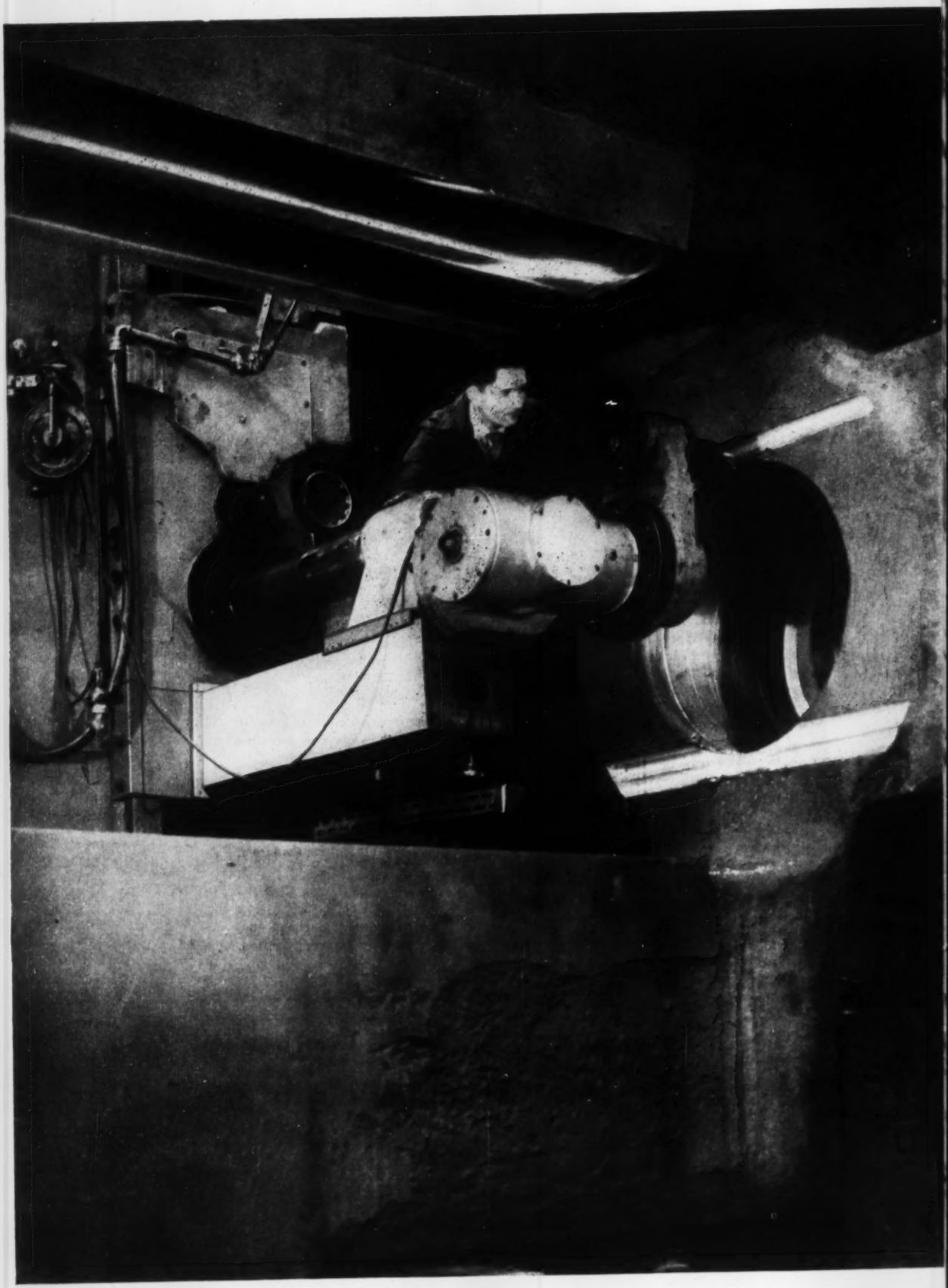
Company .....

Address .....

.....

ADJUSTABLE TO ANY LENGTH • ADAPTABLE TO ANY DRIVE

Veelos is known as Veelink outside the United States.



Beauty treatment...

for a 100-ton steel giant

Here's exceptional extra capacity that minimizes handling, setup and job time on huge castings or weldments. It's a G&L 50 Series floor type Horizontal Boring, Drilling, and Milling machine with an underarm spindle support.

Now, with a G&L 50 Series Horizontal Bar, you can provide the extra capacity to speed normal production or to simplify work on castings as big or bigger than the 100-tonner illustrated.

These superb machines, with underarm spindle supports, make it easy for you to mill, face, turn and bore with equal proficiency . . . in a single setup! Furthermore, the underarm support allows you to work at right angles to the spindle, as far as 60" from the headstock and still maintain close tolerances, flatness and parallelism.

50-Series machines, with either a 6" or 7" main spindle, mount six different attachments on the underarm. Among these capacity-boosting tools are continuous feed facing heads and angular and off-set milling heads for accurate work on limited access surfaces.

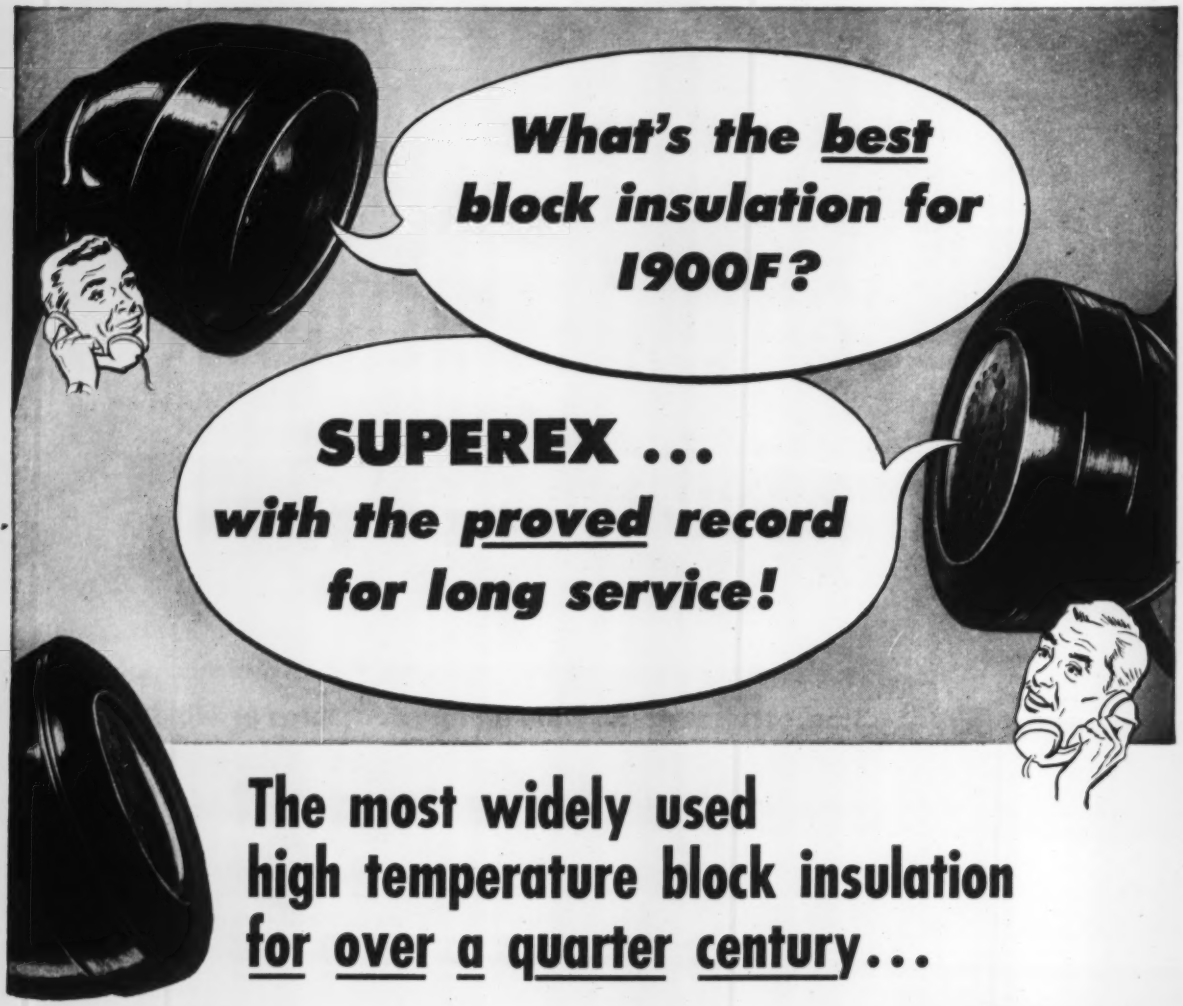
For complete information on 50 Series machines — table, floor and planer types — contact your G&L representative or write for Bulletin N-1.

G&L HYPRO DAVIS

GIDDINGS & LEWIS MACHINE TOOL CO.

FOND DU LAC, WISCONSIN

Builders of the world's finest heavy-duty machine tools — Horizontal Boring, Drilling and Milling Machines — table, floor and planer types; Hypro Double Housing and Openside Planers; Planer Type Milling Machines and Vertical Boring Mills; and Davis Cutting Tools



The most widely used high temperature block insulation for over a quarter century...

SUPEREX® high temperature block insulation has long been industry's No. 1 choice for service temperatures up to 1900F. It provides *major* economies . . . reduces fuel costs, cuts heat losses, keeps maintenance expense down, costs less to install and has long service life.

These are the reasons why 90% of the nation's hot blast stoves are Superex insulated . . . and why the low cost open hearth steel producers use Superex in their regenerators.

Made of specially selected and calcined diatomaceous silica blended with other insulating materials and bonded with asbestos fiber, Superex will safely withstand temperatures up to 1900F with negligible shrinkage.

Superex has been used with outstanding success in all types of industrial and metallurgical furnaces and ovens, stationary and marine boilers, auxiliary power plant equipment, regenerators, kilns, roasters, high temperature mains, flues and stacks.

Superex has all these important advantages...

Low thermal conductivity—Exceptionally high heat resistance (1900F) combined with excellent insulating value.

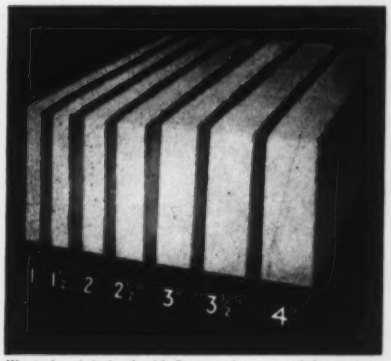
Light weight—Approximately 2 lb per sq ft per in thickness.

Great physical strength—Approximately 6 tons pressure per sq ft are required to compress Superex ½ in.

Long, efficient service life—Superex maintains high insulating value indefinitely—will not disintegrate in the service for which it is recommended.

Fast, easy application—Superex may be cut with an ordinary knife or saw for fitting around openings or to irregular surfaces. Because of its light weight and convenient sizes, Superex assures fast and economical installations.

For complete information about Superex block insulation, write for Brochure IN-134A. Address Johns-Manville, Box 60, New York 16, N. Y. In Canada, write 199 Bay Street, Toronto 1, Ontario.



Waste is minimized with Superex because of the variety of thicknesses available. Special shapes and intermediate thicknesses between those shown are also available.

JOHNS-MANVILLE JM PRODUCTS

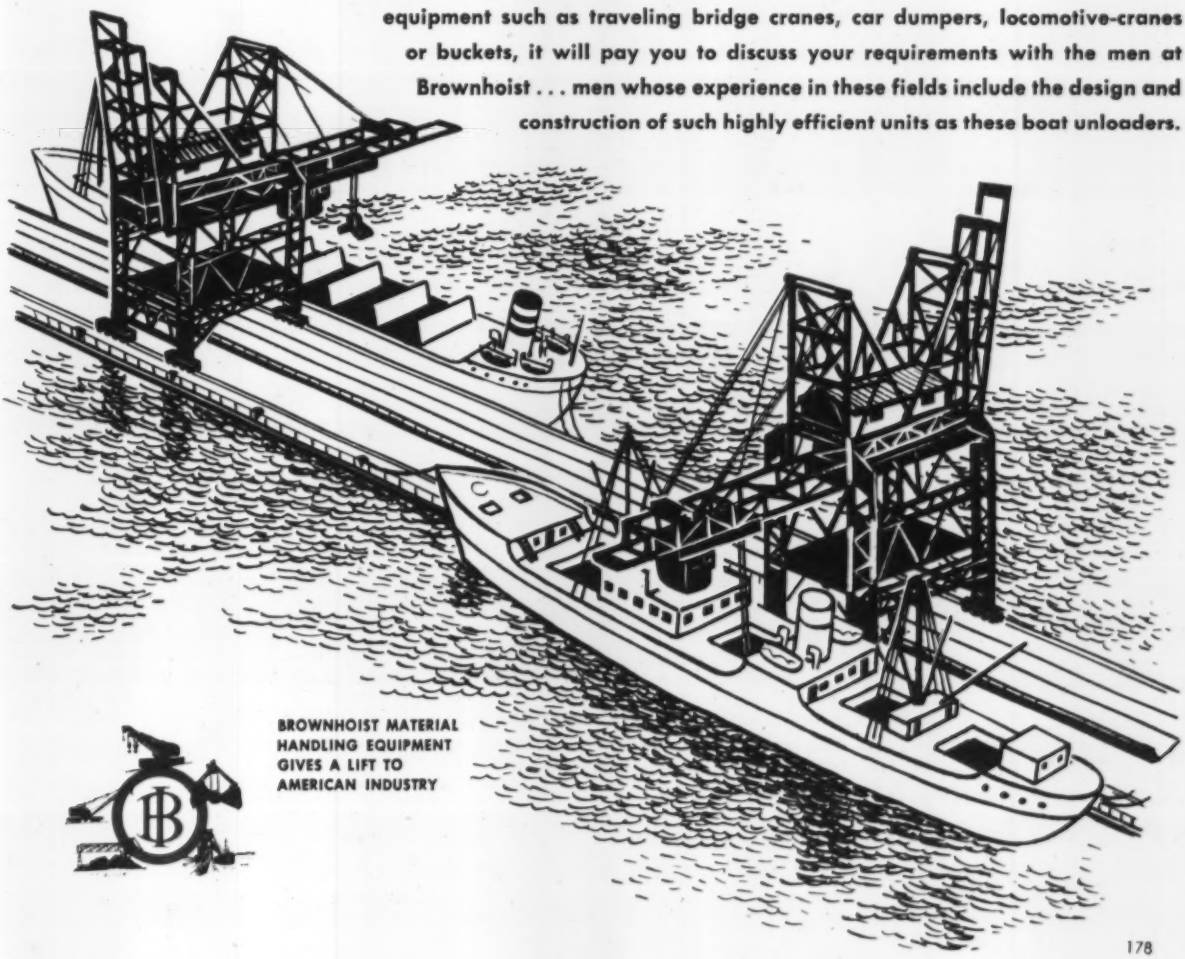
Johns-Manville *first in* **INSULATIONS**

BROWNHOIST

ORE UNLOADERS handle up to 3600 tons per hour at the huge new pier of a large eastern railroad

Two Industrial Brownhoist Ore Unloaders, each with a free-digging capacity of 1800 tons per hour, provide this new pier for ocean-going ore vessels with the most modern and efficient unloading facilities in the United States. Towering over the pier like enormous drawbridges, the Brownhoist machines can travel the full length of the pier and lower apron extensions from either side to provide a reach 72 feet from the dock. Then huge buckets, capable of taking 25 tons of ore in a single bite, roll out on the aprons, return to drop their load into 100-ton receiving hoppers and roll back again for another bite. Elapsed time from bite to bite: just 45 seconds.

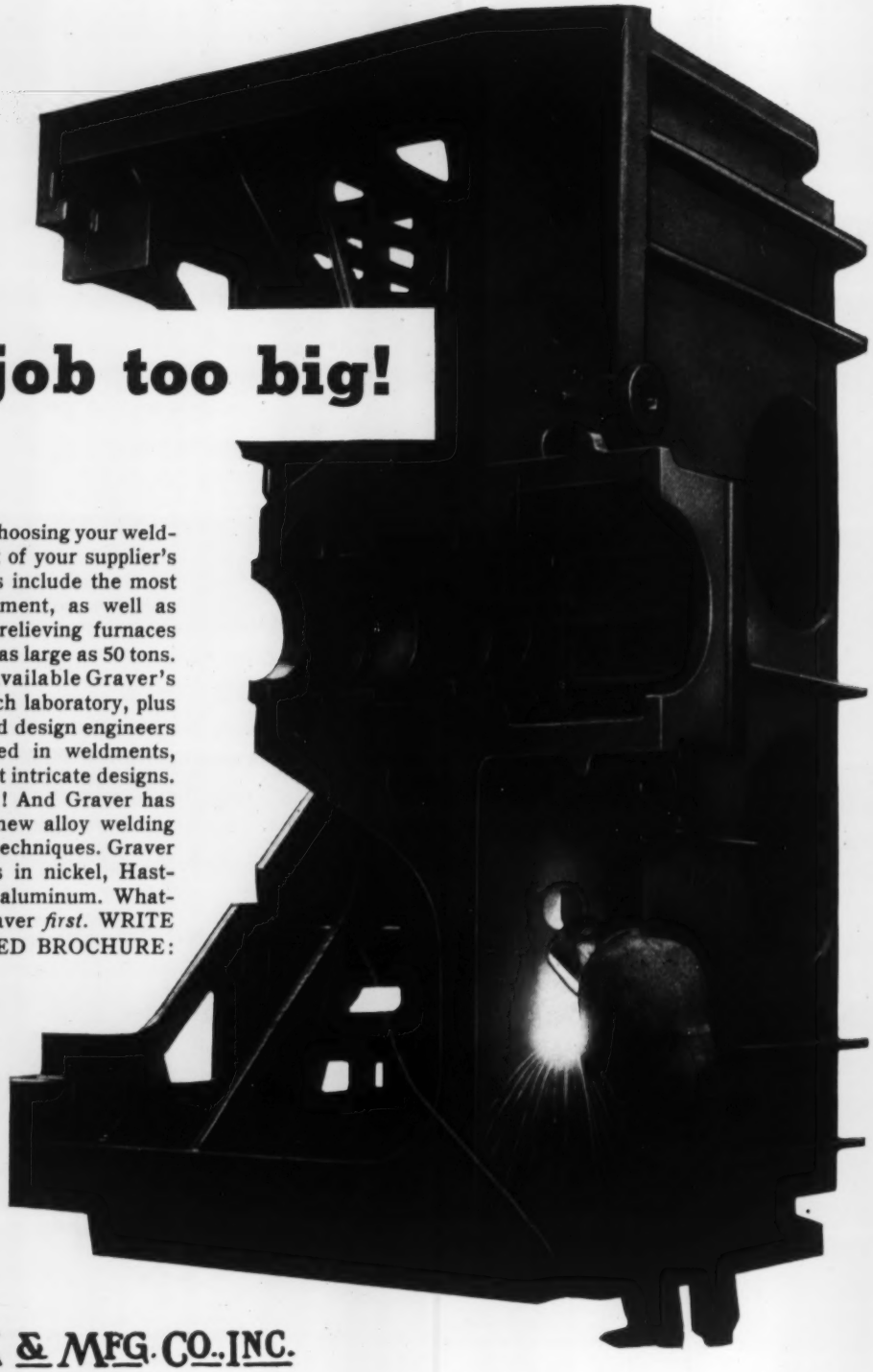
Whether your bulk materials handling operations call for ore unloaders or for other equipment such as traveling bridge cranes, car dumpers, locomotive-cranes or buckets, it will pay you to discuss your requirements with the men at Brownhoist . . . men whose experience in these fields include the design and construction of such highly efficient units as these boat unloaders.



BROWNHOIST MATERIAL HANDLING EQUIPMENT GIVES A LIFT TO AMERICAN INDUSTRY

178

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN • DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago, Denver, San Francisco, Montreal • AGENCIES: Detroit, Birmingham, Houston



no job too big!

A major consideration in choosing your weldment source is the extent of your supplier's facilities. Graver facilities include the most modern inspection equipment, as well as heat-treating and stress-relieving furnaces able to handle weldments as large as 50 tons.

In addition, there is available Graver's renowned welding research laboratory, plus the services of experienced design engineers who have long specialized in weldments, including those of the most intricate designs.

Alloy welding is an art! And Graver has pioneered in developing new alloy welding equipment and advanced techniques. Graver makes quality weldments in nickel, Hastelloy, stainless steel and aluminum. Whatever size job, call on Graver *first*. WRITE FOR NEW ILLUSTRATED BROCHURE: "WELDMENTS."

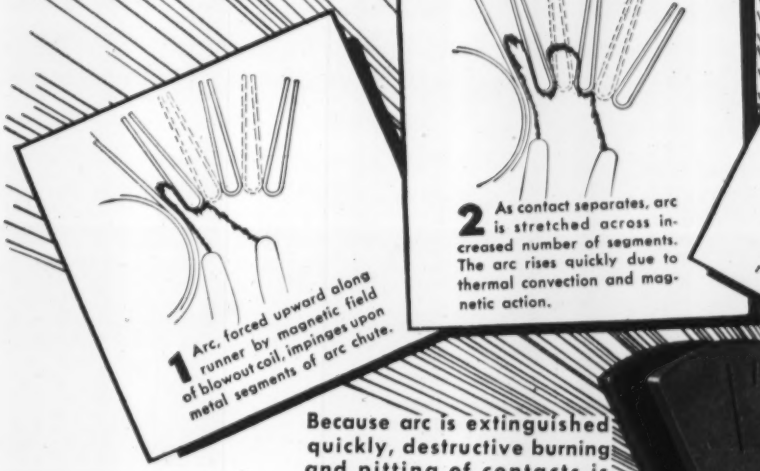
GRAVER TANK & MFG. CO., INC.

East Chicago, Indiana

NEW YORK • CHICAGO • PHILADELPHIA • ATLANTA • FONTANA, CALIF. • DETROIT
CLEVELAND • PITTSBURGH • HOUSTON • CATASAUQUA, PA. • SAND SPRINGS, OKLA.
CASPER, WYO. • ODESSA, TEXAS • LOS ANGELES • EDGE MOOR, DEL. • TULSA • SAN FRANCISCO

GRAVER .. source for *quality* weldments

Quick Quenching
EXTENDS CONTACT LIFE!

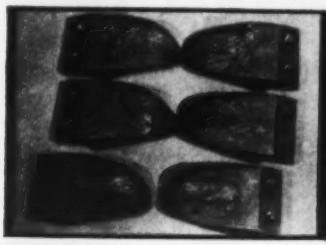

1 Arc, forced upward along runner by magnetic field of blowout coil, impinges upon metal segments of arc chute.
2 As contact separates, arc is stretched across increased number of segments. The arc rises quickly due to thermal convection and magnetic action.
3 Resistance in arc path increases as number of gaps increase. Metal elements help cool path while arc races to extinction.

Because arc is extinguished quickly, destructive burning and pitting of contacts is minimized.

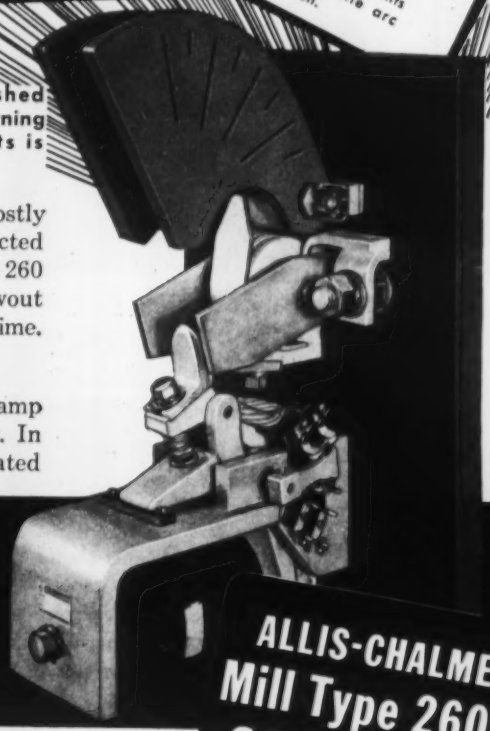
CONTACT BURNING is the most troublesome and costly maintenance factor in an interrupting device subjected to repeated overloads. In the Allis-Chalmers Type 260 contactor a quick-quenching arc centering blowout solves the problem by sharply curtailing arcing time.

No Contact Erosion After Punishing Tests

Pictured below are contacts removed from a 600-amp experimental starter after extreme overload tests. In addition to great number of interruptions at rated current and below, these tests included 70 interruptions spread between 700 and 11,000 amperes and two interruptions above 13,000 amperes. All testing was done with the same set of contacts. A-4334



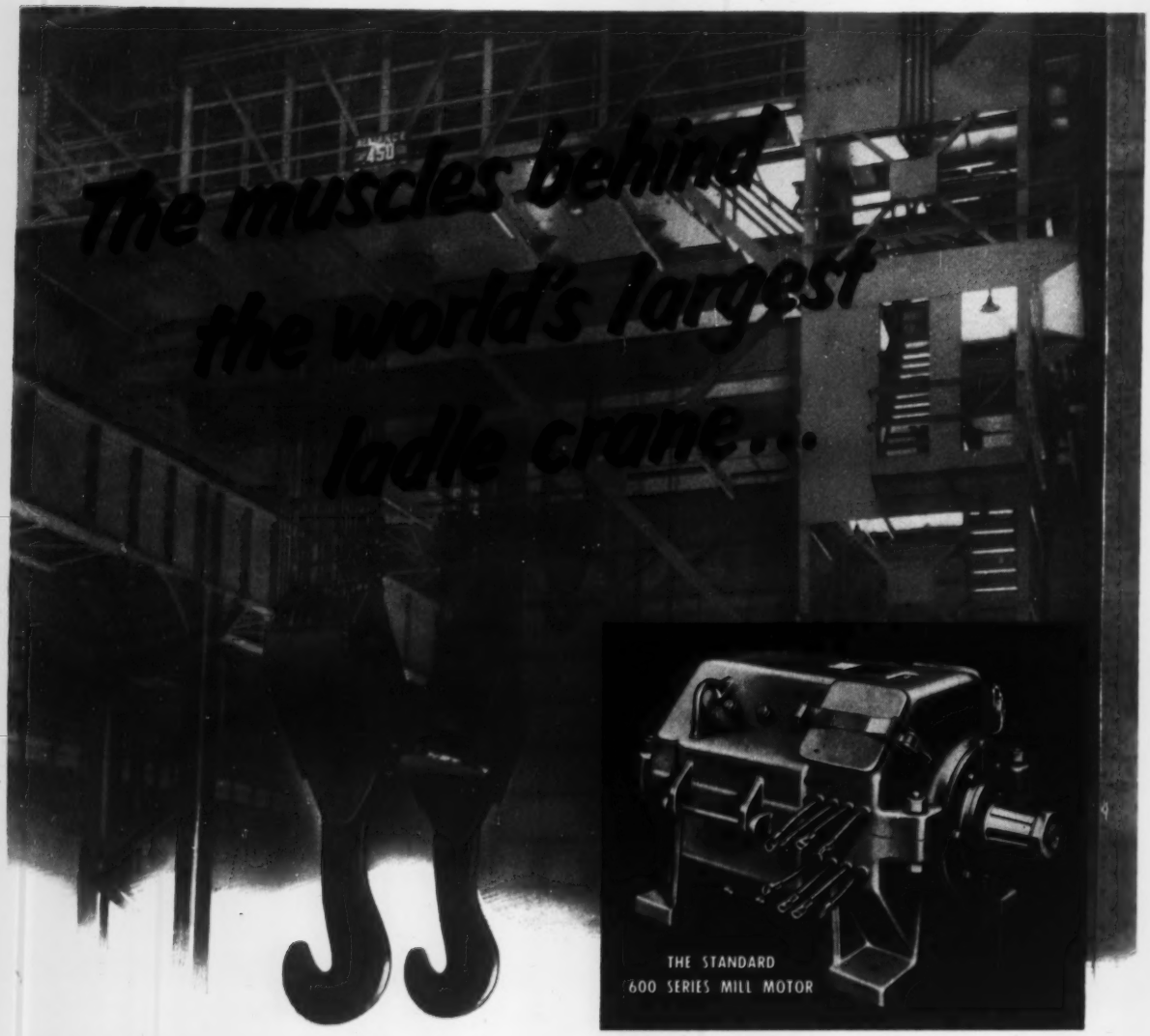
CONTACTS AFTER HIGH INTERRUPTION TESTS



ALLIS-CHALMERS Mill Type 260 DC CONTACTOR

For complete information on heavy duty dc contactors, call your nearby Allis-Chalmers representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS



ELLIOTT CROCKER-WHEELER 600 SERIES MILL MOTORS

This is one of three 450-ton hot metal ladle cranes servicing nine furnaces in the open hearth department of U. S. Steel's Fairless Works. They were designed and built by the Alliance Machine Company of Alliance, Ohio and are the largest cranes ever built for this type of operation.

The various hoist, trolley and bridge motions of these mechanical giants demand rugged, dependable motors that can stand the gaff of peak loads and heavy current changes. Elliott C-W 600 series mill motors have proven a natural for the job. Each crane employs eight of these motors, totalling nearly 1300 hp. They range in size from the two 265-hp motors lifting the 450-ton main hoist (through a synchronized worm gear), to a 65-hp motor operating the second auxiliary hoist.

For complete details on these motors, call your local Elliott field engineer, or write for the Mill Motor Bulletin to Elliott Company, Jeannette, Pa.

ELLIOTT Company

W4-6

TURBINE-GENERATORS TURBINES MOTORS GENERATORS DEAERATING HEATERS EJECTORS CONDENSERS COMPRESSORS TURBOCHARGERS TUBE CLEANERS STRAINERS

Why more manufacturers of POWER LAWN MOWERS use KLOZURES* than any other oil seal!

1. **They're uniform**—both in sealing contact and in spring load. KLOZURES are precision made to the highest standards of accuracy.

2. **They save space**—these seals are compact and light in weight, yet they're rugged.

3. **They give positive bearing protection**—KLOZURES seal the lubricant in *and* keep dust, dirt and water out.

4. **They save money**—made in radial widths smaller than conventional oil seals and with fewer parts.

Model 93-B—A narrow cross-section seal with synthetic rubber outer covering for soft metal housings.

Model 71A—A narrow cross-section springless seal for grease retention and dirt exclusion.

Model 71-B—A narrow cross-section spring-loaded seal for either light or heavy lubricants.

Leading manufacturers of power lawn mowers and power lawn mower engines know they can depend on Garlock KLOZURE oil seals for maximum bearing protection under rugged service conditions. Engine manufacturers use KLOZURES on the output shaft. Power lawn mower makers use Garlock KLOZURES to protect bearings on wheels, reels and gear boxes.

Let us show you how Garlock KLOZURE oil seals can prolong the life of your bearings. There's a service-tested KLOZURE model for every bearing application. Get all the facts —call your GARLOCK representative or write for KLOZURE Catalog No. 10.

THE GARLOCK PACKING COMPANY, PALMYRA, NEW YORK

Sales Offices and Warehouses: Baltimore • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland • Denver Detroit • Houston • Los Angeles • New Orleans • New York City • Palmyra (N. Y.) • Philadelphia • Pittsburgh • Portland (Ore.) • Salt Lake City • San Francisco • St. Louis • Seattle • Spokane • Tulsa.

In Canada: The Garlock Packing Company of Canada Ltd., Toronto, Ont.

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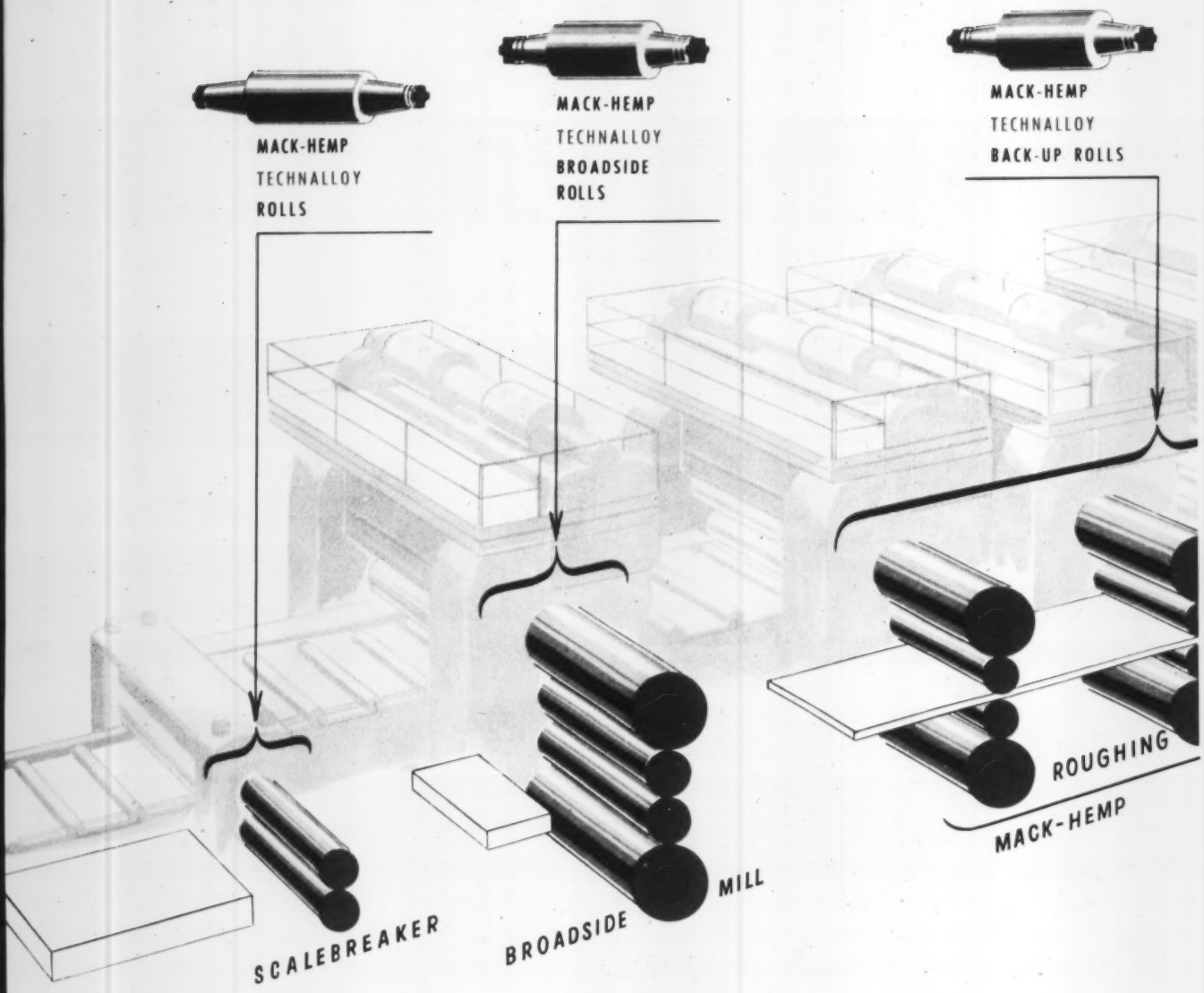
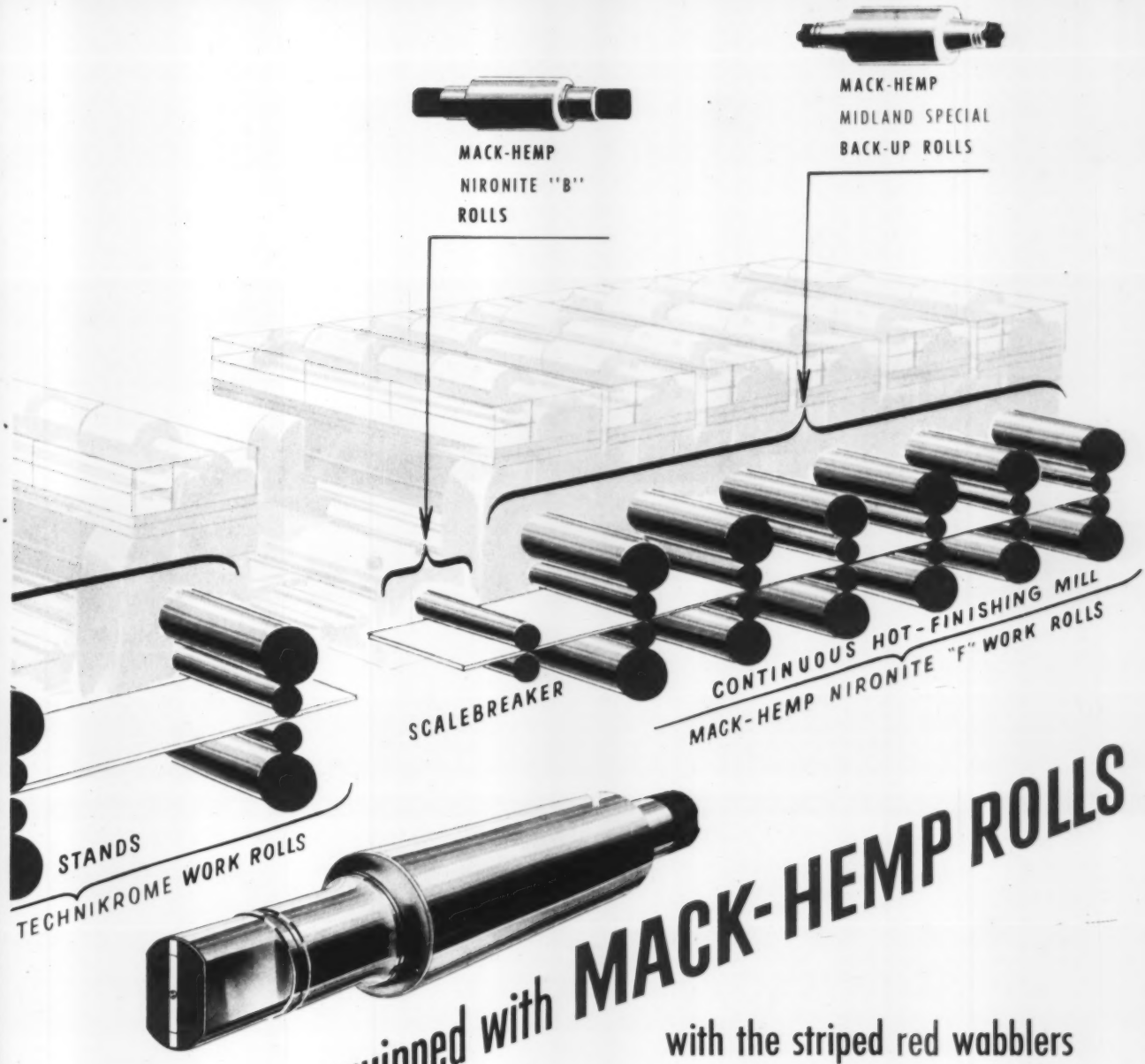
GARLOCK

PACKINGS, GASKETS, OIL SEALS
MECHANICAL SEALS
RUBBER EXPANSION JOINTS



hot strip mill production rolls ahead when

MACKINTOSH HEMPHILL COMPANY
PITTSBURGH, U.S.A.



all stands are equipped with MACK-HEMP ROLLS

with the striped red wabblers

For excellent production records here's a rolls recipe that's sure to work: put Technikrome work rolls in the roughing stands, special Nironite "F" rolls in intermediate stands, and regular Nironite "F" rolls in the finishing stands; back them up with Technalloy or Midland Special rolls.

The superior performance you can expect from a mill such as this where all stands are equipped with Mack-Hemp Rolls *with the Striped Red Wabblers*, reflects the perfect cooperation which your roll designers and mill operators have given Mack-Hemp metallurgists, plus Mack-Hemp's many years of roll-making experience.

Look into the service records of Mack-Hemp Striped Red Wabbler rolls in the mills where they are installed and you'll be convinced that it always pays to keep an eye on what's new and different at Mack-Hemp.

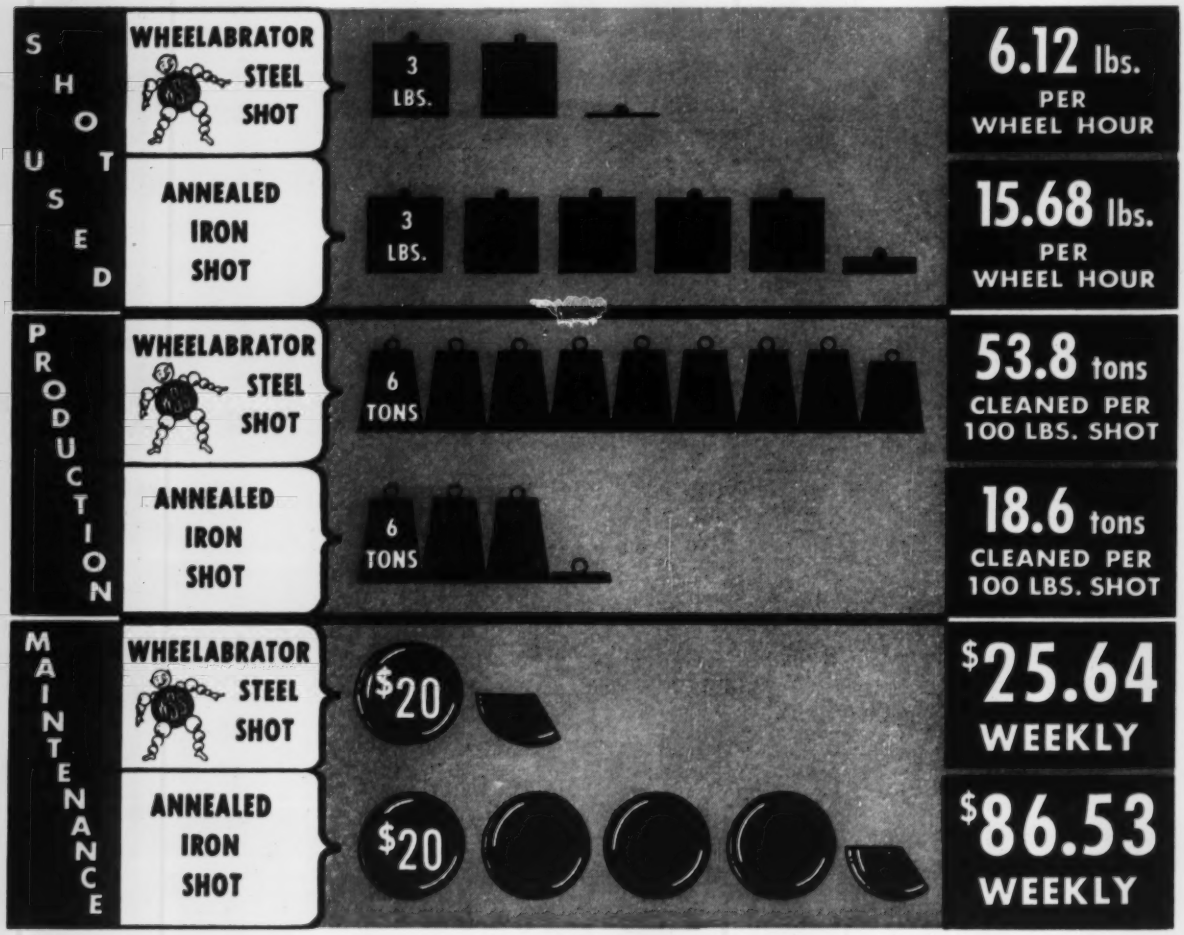
MACKINTOSH-HEMPHILL COMPANY

PITTSBURGH AND MIDLAND, PA.

Makers of the Rolls with the Striped Red Wabblers

MACKINTOSH-HEMPHILL PRODUCTS INCLUDE: all types of cast mill rolls . . . improved Johnston patented corrugated cinder pots and slag handling equipment . . . Mackintosh-Hemphill rotary straighteners—electronically controlled contouring lathes—screw feed roll turning lathes—heavy duty engine lathes . . . shears . . . end-thrust bearings . . . steel and special alloy castings . . . reversing hot strip mills . . . Y-type cold strip mills.

pioneering developments keep WHEELABRATOR® STEEL SHOT first in abrasives



How Gunite Foundries Corp. Saves

with Wheelabrator Steel Shot

Gunite Foundries Corp., Rockford, Illinois wisely switched to Wheelabrator Steel Shot for cleaning semi-steel castings in their Wheelabrator blast cleaning machine. They discovered this superior electric furnace steel shot came out on top on every count compared to the annealed iron shot previously used. As illustrated in the chart above, important savings were realized in abrasive consumption, increased production and decreased maintenance. In addition, Gunite found a noticeable improvement in the cleanliness and surface appearance of their castings.

Every day more and more foundries of every type are switching to Wheelabrator Steel Shot. The reason is obvious: Performance records in these plants prove convincingly that the lowest overall cleaning costs are achieved with Wheelabrator Steel Shot.

Combining hardness with toughness, this superior shot will clean or peen faster, at lower costs, than any other abrasive. Try it and prove it for yourself.

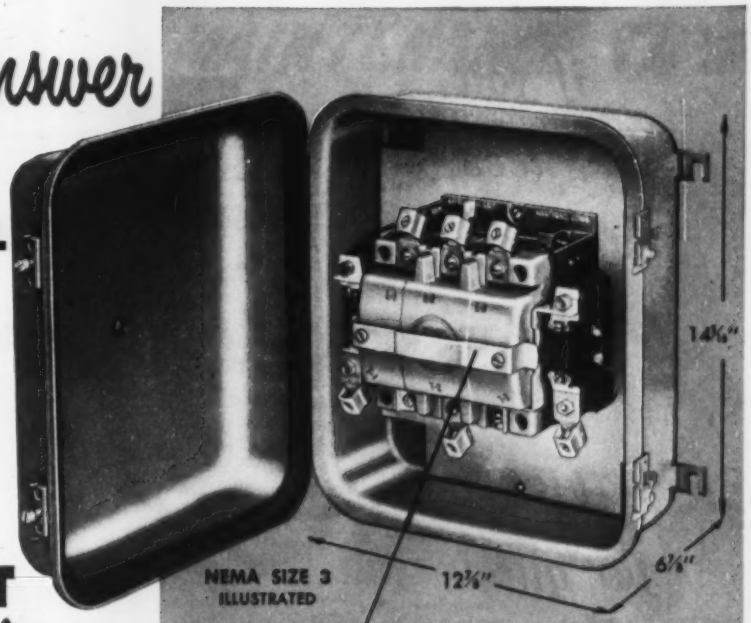
PLUS

50 lb. Cartons and Palletizing. A Scheduled Delivery Plan.

American
WHEELABRATOR & EQUIPMENT CORP.
509 S. Byrkit St., Mishawaka, Ind.

The Right Answer

TO YOUR MOTOR CONTROL "Housing" PROBLEMS



ARROW-HART INDUSTRIAL-USE Enclosures

(NEMA TYPE XII)

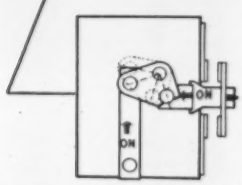
Developing this new line of NEMA XII Enclosures, Arrow-Hart worked in close cooperation with leading Industrial Engineers throughout the country. Their recommendations have helped us make these the finest enclosures ever offered for use in those industries where it is desired to exclude such materials as dust, lint, fibres and filings or oil and coolant seepage. Teamed with Arrow-Hart Type "RA" Magnetic Motor Starters, they assure the superior electrical performance that will help all machines realize their full productive efficiency.

Features . . .

- BALLOON TYPE IMPRESSION GASKET . . . of heavy neoprene effectively seals out oil.
- RUGGED CONSTRUCTION . . . of heavy, seamless drawn steel. Hinged cover is more convenient, can't be dropped, provides superior alignment with even pressure all around for a complete seal.
- AUTOMATIC LATCHES . . . hold cover securely even if locking screws are accidentally left loose.
- NO KNOCKOUTS . . . with no possibility of accidental removal or loosening of unused knockouts . . . and, thereby, no possibility of admitting breakdown materials. Plenty of room in enclosure makes it easy to drill for top or bottom entrance.
- REMOVABLE MOUNTING PLATE . . . makes it easy to remove starter from enclosure by merely loosening 2 non-removable screws.

Available . . . IN NEMA XII

- ACROSS-THE-LINE SIZES 0, 1, 2 and 3
- REVERSING AND TWO-SPEED SIZES 0, 1 and 2
- COMBINATION STARTERS . . . SIZES 0, 1 and 2



with EXCLUSIVE ARROW-HART "RIGHT ANGLE" DESIGN STARTERS

Arrow-Hart Type "RA" Starters feature a completely new, radically different operating mechanism. Working through a bellcrank lever linkage, the much smaller magnet gains added leverage and easily outperforms old-fashioned, direct-acting types. Here are some of the important benefits made possible by this first real advance in motor control design in over 25 years . . .

- GREATLY REDUCED SIZE AND WEIGHT
- IMPROVED PERFORMANCE AND DEPENDABILITY
- STRAIGHT-THRU FRONT WIRING
- ALL CONTACTS EASILY ACCESSIBLE FROM THE FRONT
- POSITIVE UNDERVOLTAGE RELEASE
- SUPERIOR ARC SUPPRESSION

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if you need stainless wire — call CRUCIBLE for quick delivery

For any diameter from the smallest to half an inch or more . . . in any temper from dead soft to full hard . . . with a bright surface, or with one of many metallic or nonmetallic finishes — yes, for *any* stainless steel wire, call Crucible.

Crucible's modern stainless steel wire mill is the last word in up-to-date production facilities. What's more, this is combined with the very finest metallurgical and quality control setup you can find anywhere. It means, for you, that every coil . . . every length . . . *every inch* of Crucible stainless steel wire can be produced to the most rigid standards of quality — that Crucible stainless wire conforms to precise standards of uniformity that are unsurpassed in the industry.

So, whatever your requirements for stainless wire — cold heading . . . free machining . . . spring . . . rope . . . weaving . . . armature binding . . . slide forming — Crucible's fine new mill is ready to serve you promptly with wire products of the very highest quality. Call your nearest Crucible warehouse for prompt delivery.

CRUCIBLE first name in special purpose steels

54 years of Fine steelmaking

STAINLESS STEEL WIRE

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REX HIGH SPEED • TOOL • REZISTAL STAINLESS • MAX-EL • ALLOY • SPECIAL PURPOSE STEELS

Canadian Distributor — Railway & Power Engineering Corp., Ltd.

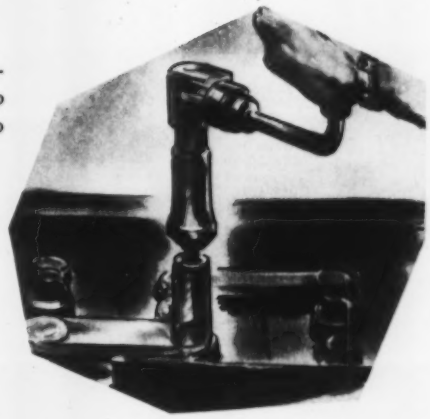
"DO IT YOURSELF" MAINTENANCE TIPS
from the GOULD Plus-Performance Plan

HERE'S MONEY-SAVING MAINTENANCE TIP #1

Accidental damage in even the best regulated operations can put a cell out of commission. Here's a tip from the Gould Plus Performance Plan on how to easily remove and repair a cell.

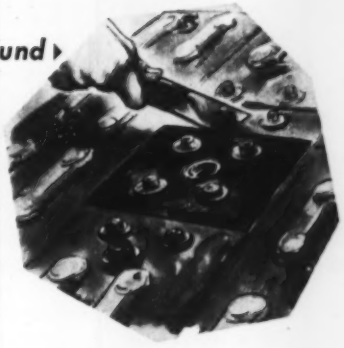
1. Remove Connectors ▸

We recommend using a special drill (Gould Part No. 35459C) which allows the cell post to remain by cutting the bond to the lead insert of the cover.



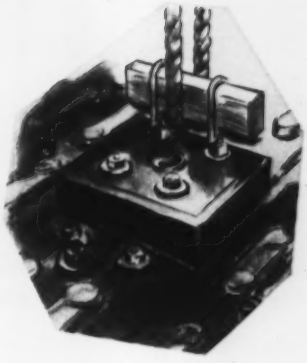
2. Remove Compound ▸

from between jar to be removed and adjacent cells. Use a warm compound knife for this purpose. Pour a little penetrating oil or kerosene mixed with regular oil into space between cells for lubricant.



3. Pull the Cell ▸

The best way is to screw a Gould Cell Puller (Part Number 77061) to the negative post remaining after drilling in No. 1. Then attach hoist and lift. If a cell has two negative posts, use two cell pullers, attaching the hoist to a piece of wood placed through the cell puller loops.

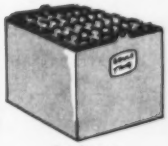


GOULD Batteries

GOULD-NATIONAL BATTERIES, INC.
TRENTON 7, N. J.

For Railroad Air Conditioning and Lighting

For Mine Shuttle Cars and Locomotives


For Electric Industrial Trucks

For Diesel Locomotive Starting

For Standby and Emergency Power

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Always Use Gould-National Automobile and Truck Batteries

This is only one example of the many helpful service tips contained in the Gould Plus-Performance Plan. For the complete set of published information on battery service and maintenance mail the coupon TODAY.

BATTERY INFORMATION HEADQUARTERS
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Please send me, without charge or obligation, the Gould Plus-Performance Plan for _____ batteries.
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Firm _____

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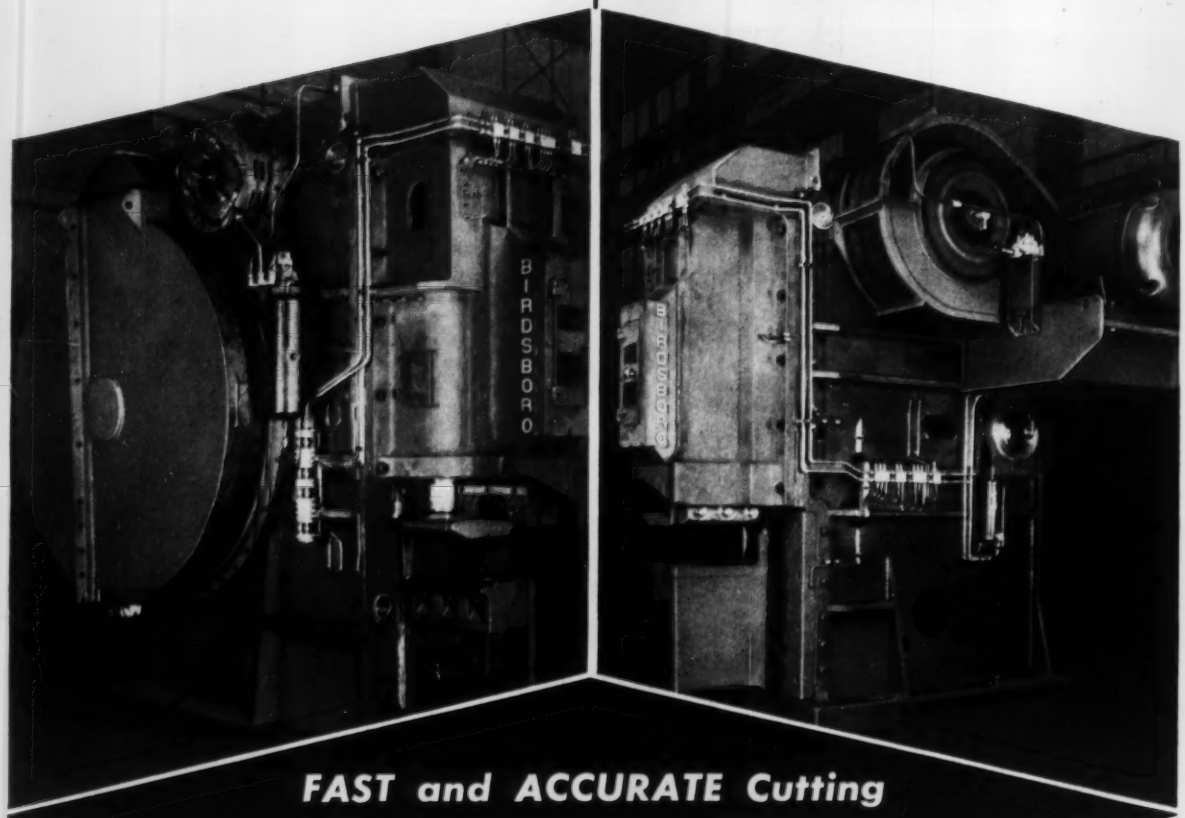
350-TON UP AND DOWN CUT SHEAR



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ROLLS: Steel, Alloy Iron, Alloy Steel

Two views of the 350-ton Birdsboro Up and Down Cut Shear. Unique up and down action plus heavy clamping gag prevents distortion of plate during shearing. Birdsboro accepts and welcomes the challenge to speed and improve your existing shearing operations. Get in touch with Birdsboro NOW . . . and save from NOW ON.

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Our Tool Steels are produced in every form, including hammer-finished bars and blocks, disc and ring forgings, standard and special hot rolled shapes and cold drawn shapes, plates, sheets, rings punched from plate, and tool bits.

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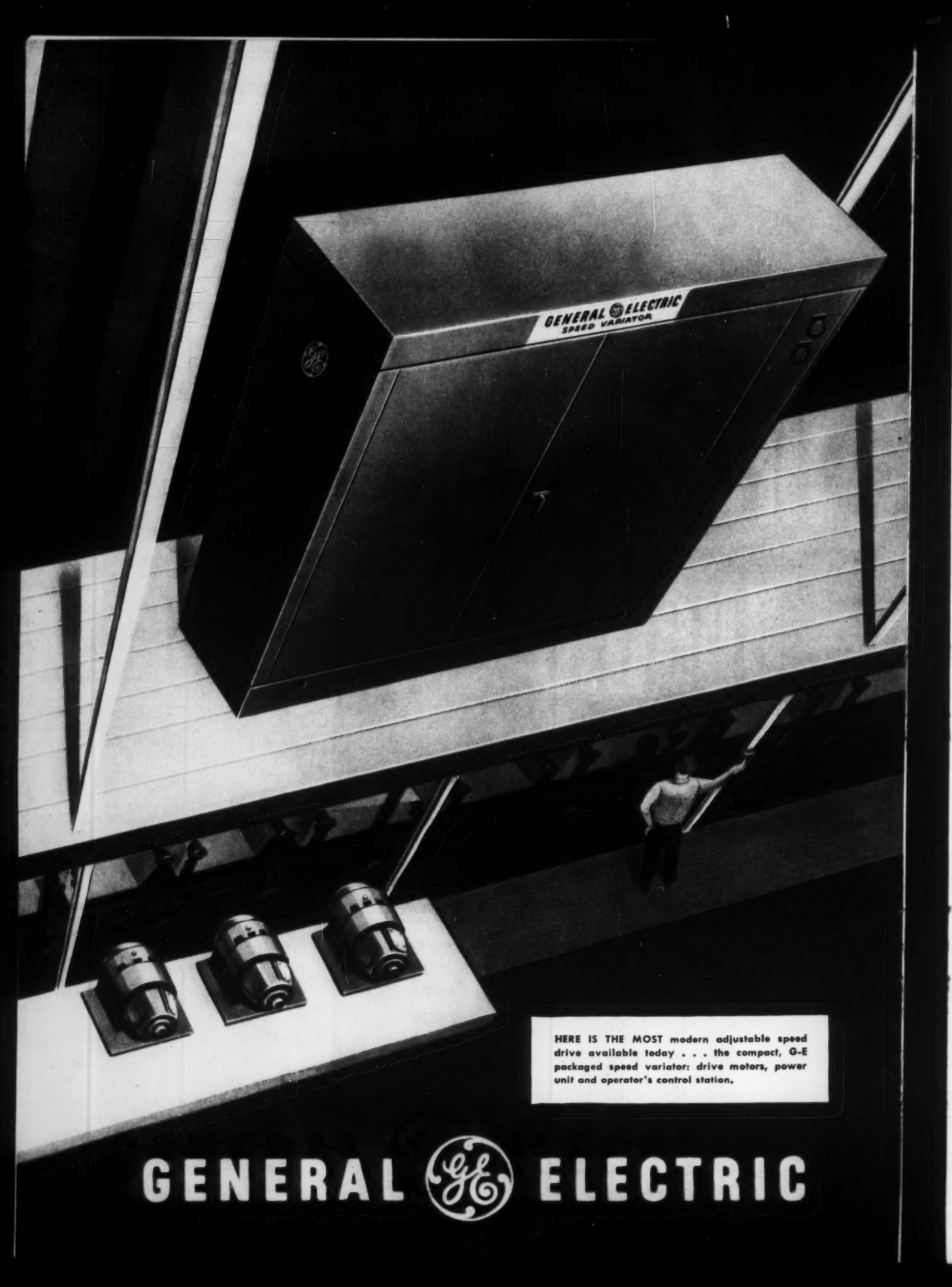

HERE IS THE MOST modern adjustable speed drive available today . . . the compact, G-E packaged speed variator: drive motors, power unit and operator's control station.

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COMPLETELY PRETESTED by G-E engineers in the factory, the packaged speed variator comes to you tailored to your job. Picture shows a power unit on one of the factory tests.

PACKAGED DESIGN of G-E speed variator simplifies installation, saves space and lessens your maintenance problems. Picture shows ready accessibility of all parts.

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There's a ***difference*** among adjustable-speed drives; here's why the General Electric ***packaged*** speed variator is your best buy:

1—JOB-TAILORED. When your new G-E drive is delivered, it has already been tailored to your specifications. It's coordinated, packaged, assembled and ***completely tested*** before it leaves the G-E factory. It's been ***engineered*** as a package to help meet your needs.

2—MORE COMPACT. Because there are only three components to the G-E ***packaged*** speed variator (see opposite page), less space is needed for the complete installation. This cuts down on costly, interwiring problems, and leaves valuable floor space available. The G-E packaged speed variator is designed to be located near your equipment . . . up above, in a basement, right next to drive motor . . . anywhere you wish. No need for expensive control housing and associated ventilating system.

3—FASTER INSTALLATION. Your installation costs drop radically and your new G-E drive is in operation faster because it's packaged in the G-E factory before it's shipped to you. Long, unproductive work-stoppages are no longer necessary.

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For further information, see your nearby G-E Apparatus Sales Office, or send in coupon. General Electric Company, Schenectady 5, N. Y.

Progress is our most important product

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Send coupon for your copy of new, 20-page bulletin (GEA-6127) on G-E packaged speed variators.

Section R 822-1
General Electric Co.
Schenectady 5, N. Y.

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UNBRAKO button head socket screws are used exclusively to assemble this controlled volume pump, which was designed to fill the growing industrial need for the pumping of an allotted quantity of liquid at higher pressures, higher capacities.

The assembler inserts the UNBRAKO button head socket screw with his fingers, and runs it down as far as he can.

He then tightens it with a standard UNBRAKO key. Once seated, the low head design of the UNBRAKO button head provides a smooth, streamlined appearance.

UNBRAKO Button Head Socket Screws are made of heat treated alloy steel; have fully formed threads, Class 3 fit; are available in standard sizes from #8 to ⅝". Accurate hex socket provides nonslip drive, prevents marring or mutilation of the head.

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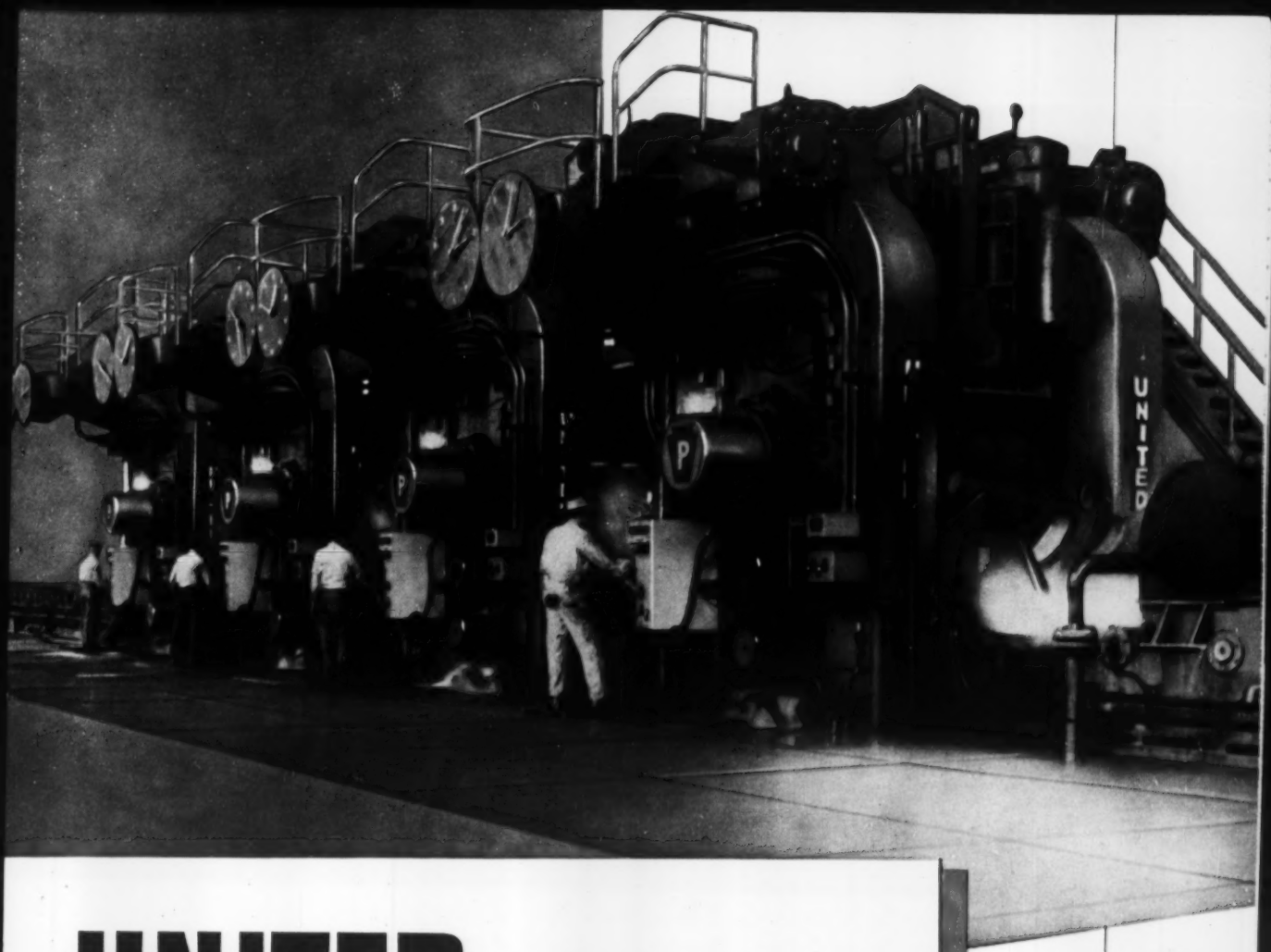
Use UNBRAKO Standards—stocked by your distributor

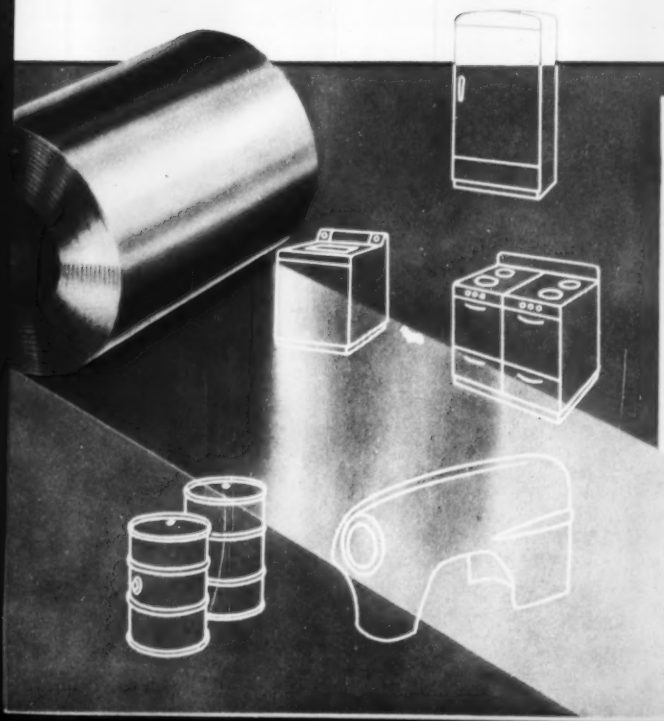
Not only does your UNBRAKO distributor lower inventory investment, he also saves you time—and provides latest information about products, cost-saving methods, production techniques, current problems, trade practices. For latest data on UNBRAKO standard socket screw products, consult him or write STANDARD PRESSED STEEL COMPANY, Jenkintown 33, Pennsylvania.

UNBRAKO® SOCKET SCREW DIVISION

SPS JENKINTOWN PENNSYLVANIA



UNITED® 4-high continuous hot strip mill



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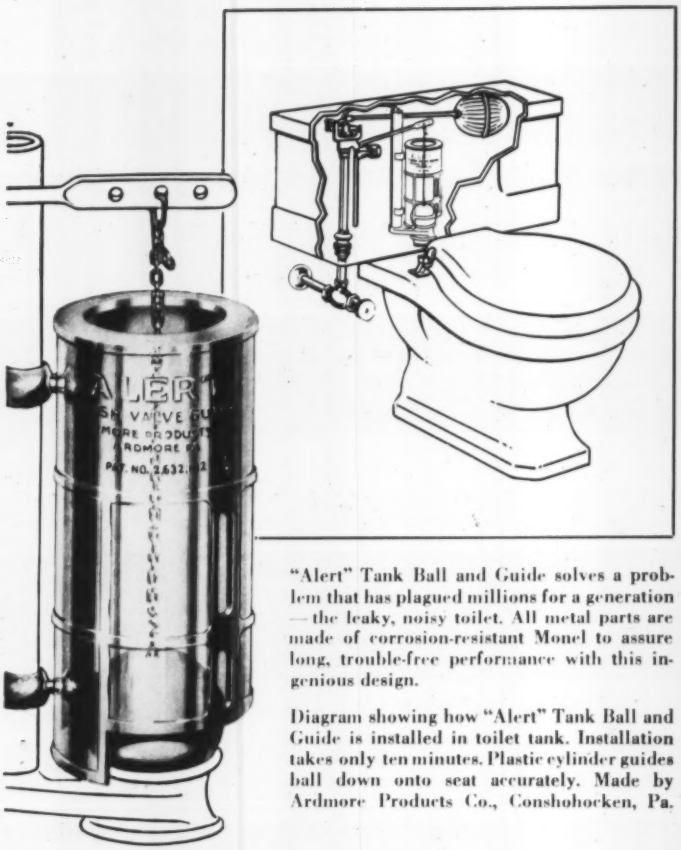

"Alert" Tank Ball and Guide solves a problem that has plagued millions for a generation — the leaky, noisy toilet. All metal parts are made of corrosion-resistant Monel to assure long, trouble-free performance with this ingenious design.

Diagram showing how "Alert" Tank Ball and Guide is installed in toilet tank. Installation takes only ten minutes. Plastic cylinder guides ball down onto seat accurately. Made by Ardmore Products Co., Conshohocken, Pa.

Probably every household is bothered at times by a "runny" toilet tank.

Once let the conventional arrangement of wires, guides and ball-spindle get just a trifle out of adjustment, and the water gurgles and splashes until someone jiggles the handle. Or else takes off the tank cover and re-seats the ball by hand.

A designer of surgical appliances had his rest disturbed by a noisy toilet tank just once too often. So he tore out the tangly wires, did away with the shifty wire guides, and substituted a hollow plastic tube and a round rubber ball suspended on a non-kinking chain.

But he didn't stop there. He realized there were several spots where even this simple device *could* fail or get out of kilter. One was the hook, chain and insert in the ball to which the chain is fastened. He foresaw how corrosive attack or wear might cause them to weaken and break.

The other two spots were the two riveted clamps with their spring grips that hold the plastic tube firmly in alignment. If they weakened or lost their spring properties, the tube could become dislodged.

To guard against failure in those three spots, he specified strong, corrosion-resistant Monel.

The device worked so beautifully he decided to make it commercially. The result is the famous "Alert" Tank Ball and Guide described in newspapers and popular magazines.

Perhaps the experience of this designer reminds you of some application in which metal failure has been bothering you. If so, Monel or one of the other Inco Nickel Alloys may prove a ready solution to your problem.

A concise description of the useful properties and characteristics of these alloys is included in a handy booklet, "Standard Alloys for Special Problems." A copy is yours for the asking.

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MONEL® • "R"® MONEL • "K"® MONEL • "KR"® MONEL • "S"® MONEL
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STEEL

September 20, 1954

Metalworking Outlook

More Military Spending

The military will place orders in fiscal 1955 for $16 billion to $18 billion worth of hard and soft goods and construction. That compares with $9.2 billion in fiscal 1954. Total obligations in fiscal 1955 will hit about $35 billion, compared to $28 billion in the year that ended last June 30. More orders are being placed, particularly with metalworking, because of the world situation. If that continues, watch for still more spending in fiscal 1956.

Coming: Income Tax Change

Despite the continuing federal deficit, look for administration approval next year of a plan to modify the personal income tax system. Officials such as Lothair Teetor, assistant secretary of commerce for domestic affairs, believe that a big factor in the current rash of mergers is the progressive income tax, carrying rates up to 91 per cent. "The medium-size business is selling out to big businesses and wants to," he says. "It's the only way to cash in on a lifetime of work without giving the bulk of one's life savings to the tax collector."

Sky the Limit on Housing?

Housing experts predict between 1.2 million and 1.4 million homes will be started in 1955. This year we are building at the annual rate of 1.2 million. Some 1,103,800 nonfarm dwellings were started in 1953, 1,127,000 in 1952, 1,091,300 in 1951 and 1,396,000 in 1950. Included in next year's starts may be 75,000 to 85,000 prefabricated homes.

Appliance Prospects Rosy

Americans will buy 428 million home appliances in the next five years, compared to 338 million purchased since 1949. Westinghouse Electric Corp.'s Roger H. Bolin says the increase will come because of "more people, more families, more people on the move, more money, more new homes and more appliances in existing homes." The greatest obstacle to higher sales, he warns, is inadequate wiring in an estimated 24 million homes. They are already hard pressed to handle the 54 appliances on the market now. And there will be even more in the next few years, if the past record of appliance invention continues. There were 19 different appliances in 1930, 36 in 1940.

1955: Better Year for Steel

"Next year will be a better steel production year than this," predicts Avery Adams, president of Pittsburgh Steel Co. He sees an upturn for the industry beginning in October that will continue into 1955. Next month's

Market Outlook—p. 205

gains will be brought largely by new orders from Detroit where the auto industry will begin rolling on 1955 models.

A Look at Welfare Funds

Watch federal and state investigating bodies that are starting to study union welfare funds. Last week a New York state group, in New York city, and a subcommittee of the Senate Labor Committee, in San Francisco, began queries. This week, in Los Angeles, a subcommittee of the House Labor Committee starts the same kind of inquiries. In addition to New York, other states—California, Minnesota and Wisconsin—have been looking into welfare funds. A third congressional crew, a subcommittee of the House Government Operations Committee, starting in the Midwest soon, will investigate labor racketeering.

Electrical Labor Trouble

Now that Westinghouse Electric Corp. has signed with the CIO electrical workers, the only serious labor trouble remaining in the electrical equipment industry is with Square D Co. at Detroit. As of last week, Square D and the United Electricalworkers were negotiating again to try to end a strike that began June 15. The Westinghouse agreement calls for a 5-cent-average hourly wage boost and higher pensions.

U.S. Industry Shows How

American industry is co-operating in a program to show Europeans how competitive enterprise works. Several groups of top foreign executives will visit this country to see for themselves that American industry can function without cartels. First group will be Germans who will arrive in New York Oct. 1 and will stay in the U.S. until Oct. 30 visiting the American Iron & Steel Institute, individual steel companies and other organizations. The foreign governments are bearing the entire costs of the trips.

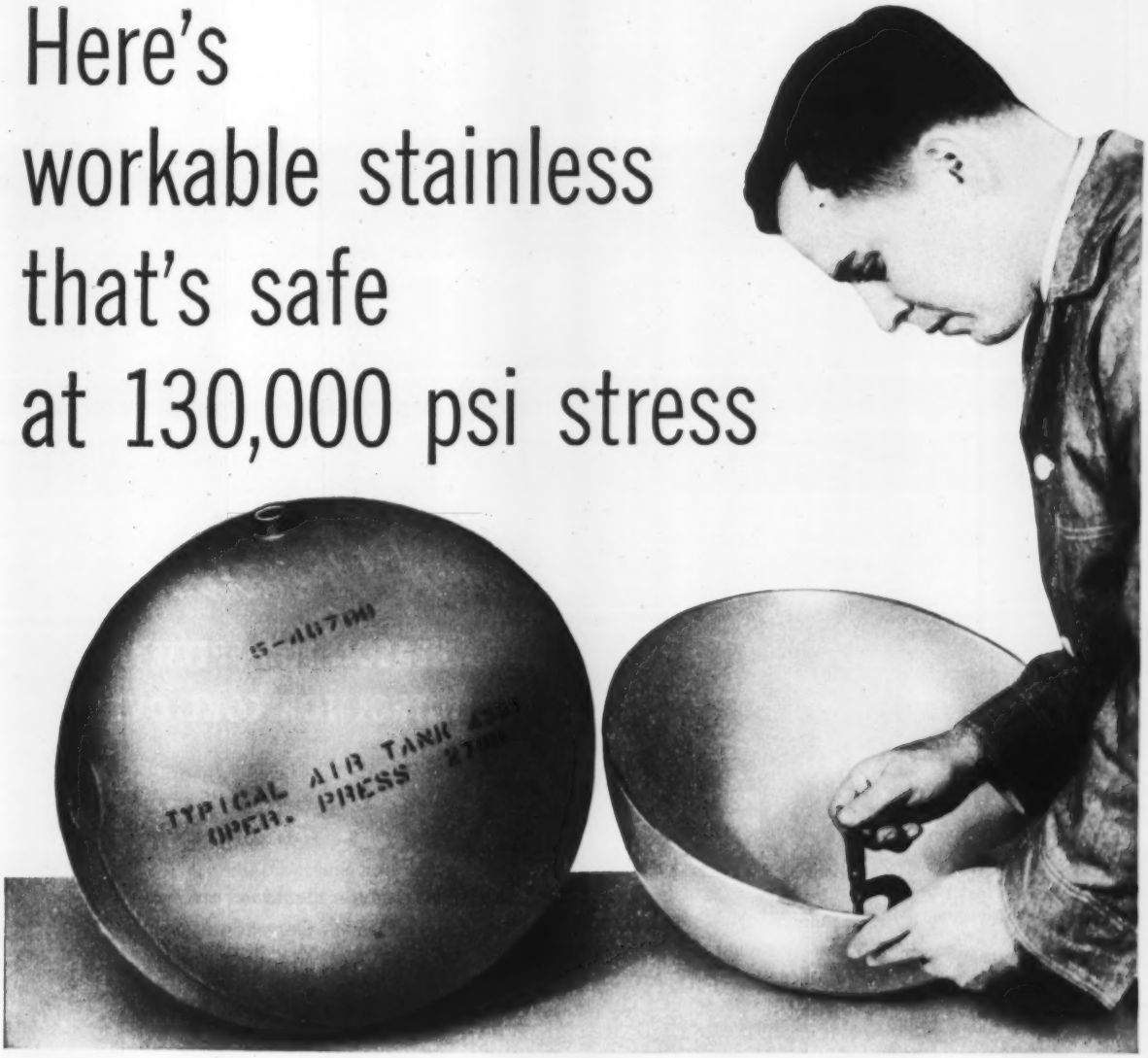
Straws in the Wind

Henry J. Kaiser says he has plans for a $25-million auto and truck plant in Cordova, Argentina . . . Automatic dishwasher sales, almost alone among appliances, are disappointing; only 3 per cent of America's 45 million families have them . . . U.S. and Belgian industrialists have expressed interests in exploiting the recently discovered Mutum iron ore deposits near the Bolivia-Brazil border . . . Colorado Fuel & Iron Corp. denies rumors that it will absorb Lone Star Steel Co. . . . Electro Metallurgical Co. will build a $31.5-million plant near Ashtabula, O., to produce 7500 tons of titanium annually by a sodium reduction process.

This Week in Metalworking

The 1954 metalworking capacity has climbed 12 per cent despite sliding capital expenditures (p. 69) . . . Republic Steel Corp. will buy Follansbee Steel Corp. rolling equipment (p. 71) . . . U.S. watchmakers keep ticking with diversification and defense work (p. 72) . . . Vacuum metallurgy moves from research lab to production line (p. 74) . . . The stork is bringing more business for toy manufacturers (p. 75) . . . Heating equipment makers see high sales ahead, largely because of the housing boom (p. 79) . . . How Stow Mfg. Co., a small firm, solved its product diversification problems (p. 80).

Here's workable stainless that's safe at 130,000 psi stress



This stainless steel pressure vessel operates under an average stress of 130,000 psi . . . is tested at a calculated stress of 169,000 psi.

Of course, the shell is constructed of a special stainless steel—Armco 17-7 PH—a precipitation-hardening type made only by Armco. The two halves are readily drawn and welded while the steel is in the annealed condition. The finished assembly is then hardened by double precipitation-hardening heat treatment.

This is the procedure for hardening Armco 17-7 PH. It is first held at 1400 degrees F for 1½ hours, then cooled to 60 degrees F or lower. After that comes a second heat treatment at 950-1050 F for ½-hour and air cooling.

WELDS STRONG TOO

The result of this double heat treatment is a minimum yield strength of 150,000 psi and tensile strength of 180,000 psi or higher. Welds have this same strength when made by the inert-gas shielded-arc system.

If you need a stainless steel with easy workability, high strength, endurance and fatigue resistance, write for information on the Armco Precipitation-Hardening Stainless Steels. Besides Armco 17-7 PH there is the single heat treatment precipitation-hardening bar grade, Armco 17-4 PH.

ARMCO STEEL CORPORATION
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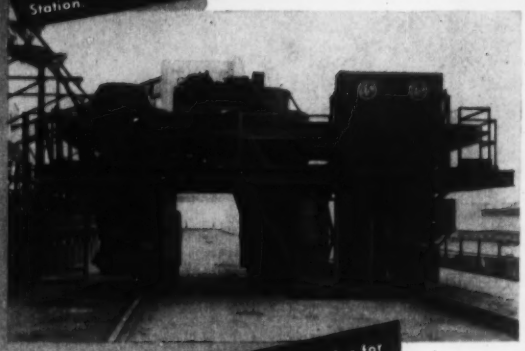
Coke Pusher built by Wellman Engineering Company, for the Wilputte Coke Oven Division. Door-Machine is in left foreground.

Improved Operation

A GOOD REASON FOR SPECIFYING EC&M CONTROL FOR COKE OVENS

EC&M Controllers for automatically operating four car-hauls at the Coke Screening Station.



Koppers Larry Car for charging coal into ovens.

These coke oven machines are operated by EC&M Controllers using EC&M LINE ARC Magnetic Contactors and EC&M TIME-CURRENT method of acceleration.

EC&M Control has the reputation for being accurately engineered for the job and likewise designed for long life. This quality apparatus is known for its low upkeep.

When buying new machines or revamping existing installations, it pays to specify EC&M Control equipment.

THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Need More Facts

Harold Stassen suggests a novel solution for an embarrassing problem. His Foreign Operations Administration is arranging a gift of 100 locomotives and 5000 freight cars to India. A Japanese builder is low bidder on the locomotives at $81,470 each. The lowest American bid is $178,200. A Belgian company's bid on 5000 freight cars is about half the lowest American bid.

The orthodox way to handle the situation would be to award the contract to the low Japanese and Belgian bidders. If this were done, the cost to American taxpayers would be $20 million. However, Mr. Stassen, taking into account the plight of American railway equipment manufacturers, suggests that 50 of the locomotives be built by the Japanese bidder at $81,470 and 50 by an American builder at $178,200. Likewise, that 2500 of the cars be built by the low-bidding Belgian company and that 2500 be supplied by three American builders.

This 50-50 compromise would increase the taxpayers' burden by $7,000,000, but it also would help a hard-hit industry and provide many welcome man-hours of work. If the deal goes through, Administrator Stassen will be praised by protectionists and damned by free traders.

Industrial executives should sympathize with Mr. Stassen's dilemma. It embraces the basic factors involved in world trade. It emphasizes clearly the difficulties that arise when attempts are made to exchange goods between a country with a high standard of living and one where the standard is low.

Industry needs to become better informed on methods by which these difficulties can be combated. We know too little about the chain reaction that sets in when the tariff on a commodity is changed sharply. Lacking adequate information, we run the danger of making serious blunders in tinkering with tariffs.

Hearings on the Japanese Trade Pact will be conducted next month. An important meeting of General Agreement on Tariffs and Trade (GATT) will be held in Geneva in November. Next year Congress will be debating the Trade Agreements Act.

These and other future discussions challenge industry to become better posted on tariffs and trade. It is one of tomorrow's major problems.

E. C. Shaner

EDITOR-IN-CHIEF

MODERNIZE TO SURVIVE: With some of the best production and engineering brainpower about to gather at Cleveland next week for the Association of Iron & Steel Engineers convention and exposition, one can't help but project the curve of technological progress a few years. Will the oxygen steel process really slash ingot costs $7.50 a ton as its back-

ers predict? How much effect will continuous casting have when producers get their first look at commercial operating figures? Will low initial investment for planetary hot mills put more people into the strip business? These are just a few of the rumblings within the industry that cause operators to scrutinize their present methods and equipment.

"Modernize to survive," may soon be the byword, AISE president E. L. Anderson believes. There's a ring to the preconvention slogan that portends great things ahead in the steel industry.

SLIT PROFITS: Only a few years ago many users of light, flat-rolled steel in narrow widths thought they couldn't use material slit from cold-rolled steel sheets. They thought the edge wasn't right and the quality of the steel wasn't proper for fabrication.

Now a new development is taking shape. There's enough demand to prompt steel producers to inaugurate a pricing setup to capture carload business—business that has been getting away from them. Until now, mills applied a cold-rolled sheet price only when the material was over 12 inches in width. Cold-rolled sheet 12 inches and less in width was priced as cold-rolled strip, a higher-priced product. Consumers found it cheaper to buy wide strip in coils and have processors slit it into narrow widths for a fee.

Now, mills are extending their pricing to cover material as narrow as 2 inches slit from cold-rolled sheet (p.218). Prices are $13 to $77 a ton below the cost of cold-rolled strip.

It pays to keep an open mind.

NEW PRODUCTS FOR ALL: If you think a company with only 116 employees is too small for diversification, read "A Small Firm Finds a Quick, Economical Way to Diversify" (p. 80).

Faced with a loss of government contracts, management at Stow Mfg. Co., Binghamton, N. Y., started thinking about new products as a way out. How they got what they wanted is a blueprint for other small companies in similar situations.

To get a line on what the new product should be, Stow confronted its distributors with a list of items they could make. A rotary trowel for finishing concrete won out.

Stow's small engineering staff was busy, so the project, from technical survey to prototype, was farmed out to a consulting firm. Stow stepped back into the picture to do production drawings believing its staff could do them faster because they knew the production setup.

Outside work cost $10,000—not bad, considering that Stow now has an excellent new product, plus a new lease on its business life.

VACUUM METALS: Many scientists and industrial men have predicted that the next decade will see more spectacular technological developments than the last ten years, even though that span has brought changes to stagger the mind. One of the potentials is in vacuum metallurgy (p. 74).

The process isn't new, but its practical application is. The technique permits production of a variety of metals with improved anticorrosive and other qualities. Output is a pittance now, but it's gaining. As soon as costs come down—and fall they will—production will become substantial.

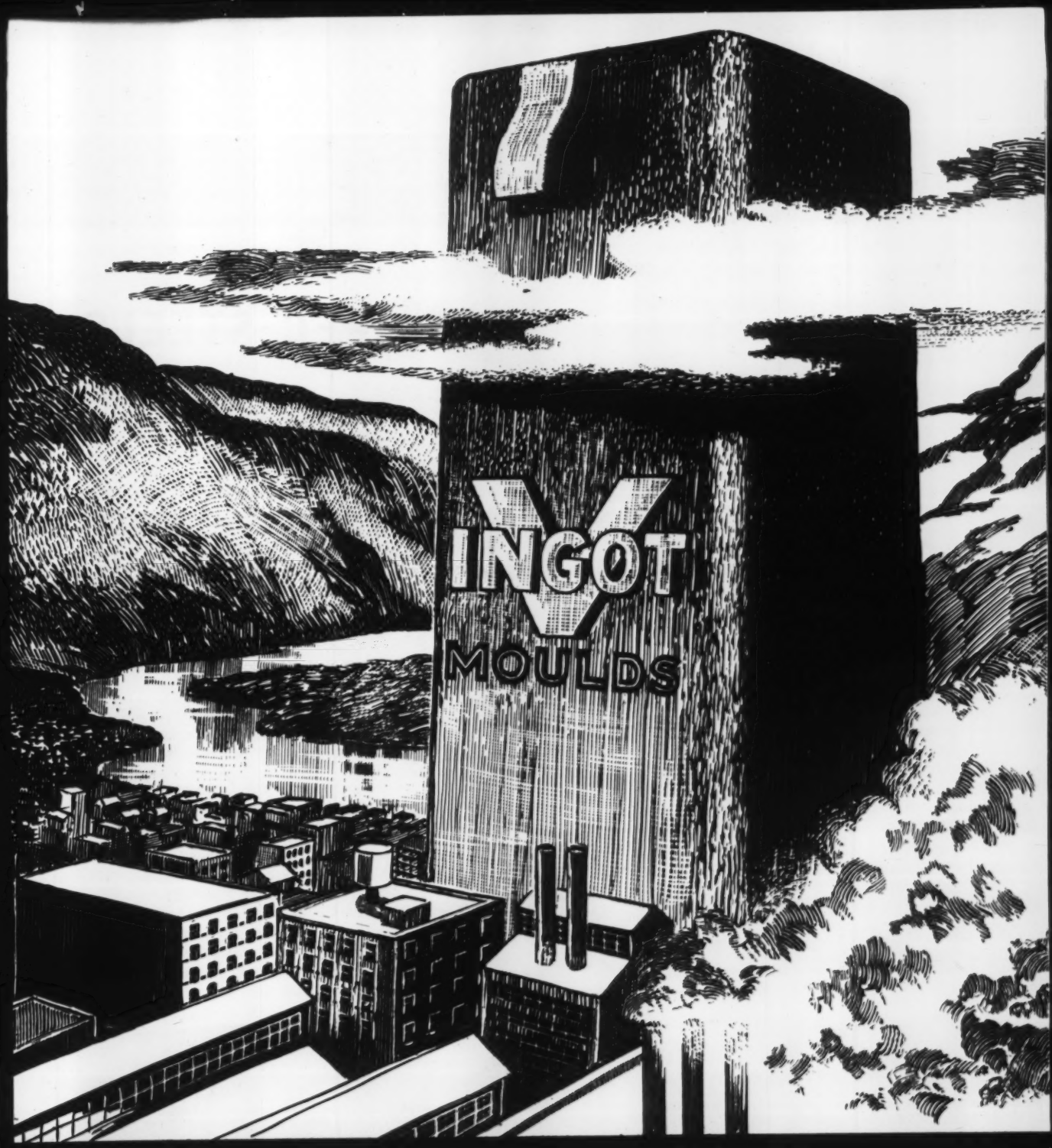
Already vacuum metals are finding uses in electronics, superalloys and precision and instrument bearings. But that's only a start for another technical tool for industry.

MORE STEEL COMING: The steel industry is thinking about what kind and how much steel capacity it will need in the next few years. Even though operations have been sagging in the low sixties for weeks, executives have not been dampened in their planning for expanding markets they see ahead.

Present capacity of 124 million tons is more than enough to satisfy current requirements of civilians and provide a safe cushion in case of another emergency. Yet, as much as 12 million tons may be close to the scrap heap and the remainder will need to be replaced within the next three decades.

Planning is bigger than the replacement of present plants with more efficient ones using new and improved processes. Per capita consumption of steel has been growing steadily. Today, the figure is 1400 pounds per person. Chances are it will be 1600 to 1700 pounds in the next ten years.

Expected consumption can be readily translated into 145 million tons of steel ingot capacity and billions of dollars in fabricated products.



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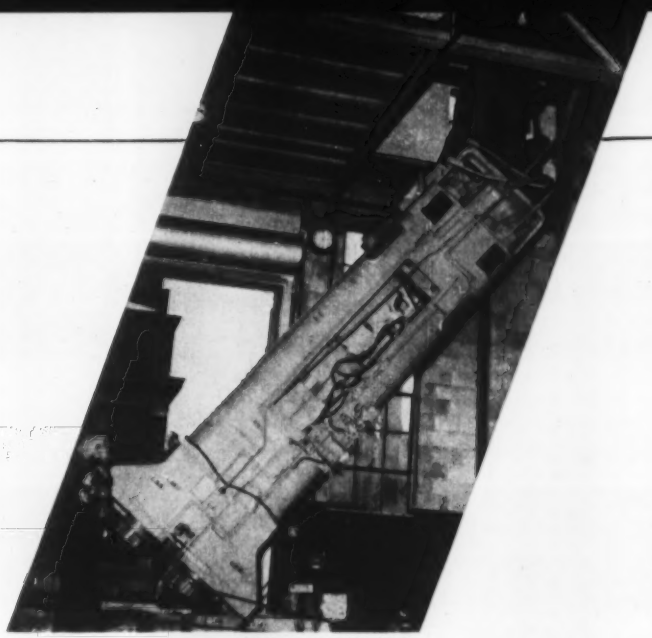


Battelle Memorial Institute

1954 Metalworking Capacity Up 12 Per Cent Despite Sliding Capital Expenditures

DESPITE the dip predicted in capital expenditures, a STEEL survey indicates the metalworking industry will expand its productive capacity 12 per cent in 1954.

And the outlook is that capital spending will hold at this year's rate well into 1955, too. Industrywide expansion programs are fairly well complete, but there's still a lot of filling in to be done.

Wave of Future—All indications are that this year and the next few are only resting times while industry gets set for even bigger expansions in the late 1950s and early 1960s. Steel ingot capacity, for example, may jump to 145 million tons by 1965 (see p. 111).

The Commerce department and SEC (Securities & Exchange Commission) report capital expenditures will be off 6 per cent from $28.4 billion in 1953 to $26.7 billion in 1954 based on indications received last month.

Gentle Curve — Business has been gradually tapering its capital spending from the record highs of 1953. Seasonally adjusted annual rates of spending were $27.5 billion in first quarter, 1954; $27.2 billion in second quarter, 1954; will probably be $26.8 billion in third quarter; and $26.0 billion in fourth quarter, 1954.

Manufacturers plan to spend $11.3 billion on new plant and equipment this year, 8 per cent below similar spending in 1953. But the larger firms—those with assets of $100 million or more—indicate they have scheduled outlays about equal with last year's.

Durables Down—Durable goods manufacturers plan to cut their capital spending by 11 per cent. Considering the completion of expansions in primary iron and steel nonferrous metals and many other durable goods lines, the wonder is that the drop will not amount

NEW PLANT, EQUIPMENT SPENDING SLIPS
(Millions of dollars)

	1951	1952	1953	1954
Manufacturing	10,852	11,632	12,276	11,332
Durable goods industries	5,168	5,614	5,821	5,198
Primary iron and steel	1,198	1,511	1,340	891
Primary nonferrous metals	310	512	456	302
Electrical machinery & equipment	373	386	481	461
Machinery except electrical	683	701	803	694
Motor vehicles & equipment	851	855	1,168	1,510
Transportation equipment excluding motor vehicles	219	211		
Stone, clay and glass products	397	330	339	335
Other durable goods	1,136	1,107	1,233	1,004
Nondurable goods industries	5,684	6,018	6,455	6,134
Food and beverages	853	769	818	764
Textile mill products	531	434	351	290
Paper & allied products	420	364	431	448
Chemicals & allied products	1,247	1,386	1,559	1,322
Petroleum & coal products	2,102	2,535	2,762	2,796
Rubber products	150	154	158	133
Other nondurable goods	382	377	376	381
Mining	929	985	1,011	1,008
Railroad	1,474	1,396	1,312	851
Transportation, other than rail	1,490	1,500	1,464	1,405
Public utilities	3,664	3,887	4,543	4,274
Commercial and other	7,235	7,094	7,778	7,818
Total	25,644	26,493	28,391	26,687

Sources: Securities & Exchange Commission; Department of Commerce. 1954 figures based on business estimates.

to more than 11 per cent in 1954.

Nondurable goods manufacturers plan to reduce capital spending by 5 per cent in 1954; mining firms will stay about where they were last year; railroad transportation companies will reduce their spending by the greatest percentage—35 per cent in 1954 compared with 1953; other forms of transportation will cut back by 4 per cent; public utilities will be down 6 per cent and commercial and other types of concerns will be off 1 per cent in their capital spending over the same period.

Add, Build or Buy?—The 12-per-cent increase in 1954 productive capacity of the metalworking industry will come about in roughly this proportion: 40 per cent in plant additions, 40 per cent in new equipment and 20 per cent in new plants.

Salesmen, do you have your order books handy?

Home Repair Expenditures High

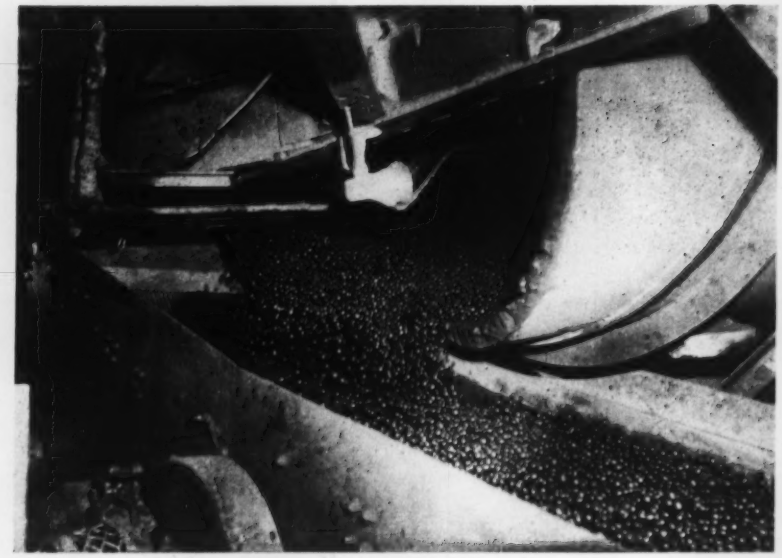
Home owners spent about $3 billion for repairs, improvements, alterations and additions during the first five months of 1954. The information comes from preliminary results of a survey conducted by the Bureau of the Census, Department of Commerce.

For May alone, home owners spent an estimated $832 million. For April, the expenditure is estimated at $688 million and for the three months of January, February and March, the estimate is $1486 million.

U.S. Highway Program Staffed

The $50-billion, 10-year national highway program has been bolstered by President Eisenhower's appointment of four executives to his advisory committee. It's headed by Gen. Lucius D. Clay, USA (Ret.), board chairman of the Continental Can Co.

Appointed were: William A. Roberts, president of Allis-Chalmers Mfg. Co., Milwaukee; S. Sloan Colt, president of Bankers Trust Co., New York; Stephen D. Bechtel, San Francisco construction executive; and David Beck, president of the AFL International Brotherhood of Teamsters.



Taconite will flow faster from Mesabi as . . .

New Pelletizing Process Makes Early Debut

A NEW AND SIMPLE process for pelletizing and heat-hardening taconite has been developed by Arthur G. McKee & Co. and Allis-Chalmers Mfg. Co.

Quick acceptance of the process was indicated when Reserve Mining Co. ordered this equipment for its new E. W. Davis Works at Silver Bay, Minn. The facility, which will cost about $19 million, will turn out 12,000 tons of pellets a day in full operation (see STEEL, Sept. 13, p. 76).

What's New?—The A-C—McKee process has many advantages including: Heat recovery and reuse; quality control through direct view of the process by the operator; breakage of pellets minimized because pellets remain stationary on a grate that carries them through the furnace.

Here's how the process works: Balls of taconite are formed in large drums rotating at a predetermined speed. These are fed on a moving furnace grate at 50 to 55 tons an hour. At this step the pellets are $\frac{3}{8}$ to $\frac{5}{8}$-inch in size and contain about 10 per cent moisture and some powdered anthracite coal. The 6-foot-wide grate moves through a 190 to 200-foot-long horizontal furnace. Pellets are dried and ignited. Slow burning of the pellets in turn generates a heat of its own; heat from that process is recovered and used for drying and igniting "green" pellets being fed into the machine.

Without Transfer—Pellets are cooled on the same grate that carried them through the heating cycles by pulling large volumes of cold air down through the grate bed. Only then are the pellets discharged, screened and sized for shipment to blast furnaces.

The steel industry was caught short somewhat in its development of equipment to process the taconite ores of the Mesabi when World War II forced heavy usage of available direct-shipping ores. The A-C—McKee process will help make up for lost time and help assure iron ore in usable form from the Mesabi for years to come.

Materials Diet Hits Pay Dirt

The materials conservation program of the Department of Defense earned its keep in 1953. Many needed dollars and millions of pounds of critical materials were saved, reports Thomas P. Pike, assistant secretary of defense for supply and logistics.

Conservation is promoted a number of ways: The substitution of less critical for more critical materials, simplified design, reduc-

tion in size and weight of such items as radios and radar, improved packaging, elimination or combination of parts, repair and salvage and improved scrap-handling practice.

Nickel (the world's most critical material since the start of the Korean war) is a typical target. The Department of Defense had 292 projects in 1953 to conserve it.

AISI Announces Fall Program

American Iron & Steel Institute has announced its program of regional technical meetings for this fall. They'll be held in Philadelphia, Oct. 6; Pittsburgh, Oct. 14; Birmingham, Oct. 20; Chicago, Oct. 27; and San Francisco, Nov. 5.

The programs, in most cases, will consist largely of reports on research projects sponsored by the institute.

Another Payment Plan

Easy payment terms for industrial equipment continue to gain in popularity.

Surface Combustion Corp., Toledo, O., has established a deferred payment plan for financing large-size industrial furnaces and air conditioning equipment.

The company offers terms of payment up to three years and, in certain cases, up to five years. Down payments are normally 25 per cent of the purchase price.

Electronics Outpaces the West

The electronics industry on the West Coast will continue to grow faster than the West itself, predicts William R. Hewlett, Hewlett & Packard Co., Palo Alto, Calif.

While the national ratio of cost of production equipment to yearly sales averages about 70 per cent, the electronics industry as a whole has a ratio of 9 per cent. The national average of working capital per employee is about $4000. It's about $2500 in the West Coast electronics industry.

"This means that a company may get under way with surprisingly little capital, and yet have a good chance of real success," Mr. Hewlett told the Western Electronic Convention at Los Angeles.

Republic Buys Follansbee Equipment

Facilities will be moved to Gadsden, Ala., for production of flat-rolled products to meet the growing demand for them in the expanding southeast market

DIVERSIFICATION of its Gadsden, Ala., plant is Republic Steel Corp.'s aim in buying the equipment and inventory of one of Follansbee Steel Corp.'s plants in Follansbee, W. Va. Purchase price was not announced.

Gadsden's main product now is large diameter pipe for which demand has slackened. Installation of the new equipment will allow Republic to cash in on the growing demand for flat-rolled steel products in the expanding southeast market.

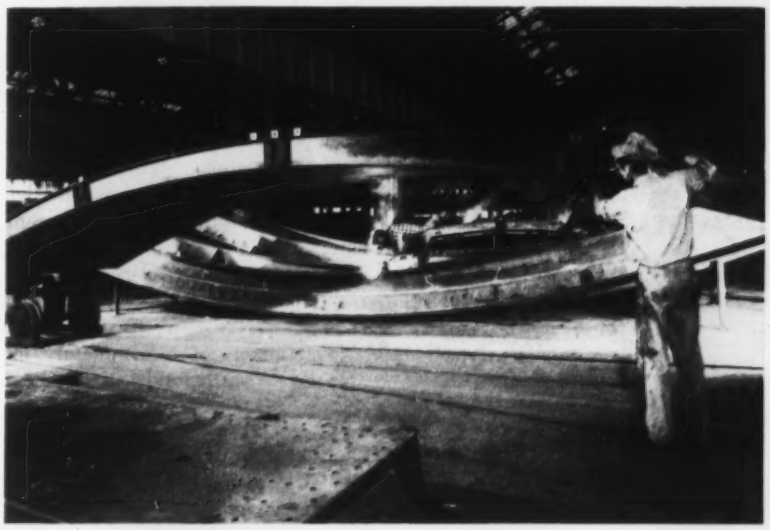
Included in the transaction are two cold-reducing strip mills, one cold-finishing strip mill, and two continuous cold sheet mills, auxiliary equipment and two tinning pots for long terne plate. Annual capacities are 150,000 tons of cold-rolled strip, 100,000 tons of cold-rolled sheets and 31,000 tons of long terne plate. No new construction will be necessary to house the equipment.

Republic will buy the facilities from F. W. Richmond of New York and his associates. The mill is part of the assets of Follansbee that the Richmond group has arranged to buy for $9 million, subject to Follansbee stockholders' approval on Oct. 15. Follansbee directors already have accepted the offer.

Deal Makes Sense—Commenting on the transaction, Mr. Richmond said that "Follansbee today is not an integrated company and is not able to compete in fields in which it operates. The mill at Follansbee does not stand on its own feet in today's competitive market, but it does fit into the Republic picture, and that is why it makes sense for me to sell it to them."

In Follansbee, civic leaders said the deal would turn the community into a ghost town. Follansbee was the town's major industry, and its taxes accounted for about 65 per cent of the town's revenue.

Republic will offer jobs at Gadsden to about 150 skilled employees of Follansbee, which at one time employed almost half of the town's 5000 population.



Giant Caissons Will Support Mackinac Straits Bridge

Workmen at the Ambridge, Pa., plant of U. S. Steel's American Bridge Division fabricate steel for the new Mackinac Straits Bridge caissons. When filled with concrete, the caissons will support the two main towers of the bridge linking Michigan's upper and lower peninsulas. Eight of these members form single outer wall sections of the caissons. In all, over 5100 tons of steel will be used

U. S. Jeweled Watch Industry Bolsters Slow Market with New Products, Defense Work

The American watch industry is working at about 40 to 45 per cent of its timepiece capacity. Higher import tariffs on watches may improve that percentage next year. Meanwhile, U.S. watchmakers worry about loss of skilled workers

Hamilton Watch Co.

JEWELED WATCHES
U. S. Production Vs. Imports
(thousands of units)

	U.S. Production	Imported
1936-1940 annual average	1,678	2,639
1941-1945 annual average	1,602	6,445
1946-1950 annual average	2,475	7,399
1951*	3,162	8,828
1952*	2,433	8,737
1953*	2,365	10,020

Source: U. S. Tariff Commission.
*Preliminary.

DIVERSIFICATION and defense contracts are keeping the jeweled watch industry ticking.

Sales of domestic watches peaked at $84 million in 1948, fell to $70 million in 1953 and are off again this year, but not all balance sheets show red.

Gains—Two of the most aggressive companies report a substantial dollar-volume increase in the first half of 1954, compared to the same 1953 period. Business at Elgin National Watch Co. for seven accounting periods was up 20 per cent. Hamilton Watch Co. reports a gain of over 12 per cent for the first six months.

Over-all, says the Bureau of Labor Statistics, of the 9754 employed in the jeweled watch industry about 5500 were in production of products other than watches, parts or service in April of this year. In 1950 only 50 out of 7811 were not in watch or parts production.

Action—Elgin has a long-range diversification program under way to enter the miniature electronic components and automatic production instruments fields (see STEEL, Feb. 8, p. 77). Currently, its lines other than watches include men's jewelry, ammunition components, timing instruments, abrasives, carbide rotary tools, precision lubricants and its new cobalt-base spring alloy, Elgiloy.

Hamilton since 1952 has taken on such defense items as fuses and other precision timing devices. The company reports a current backlog in defense contracts of about $10 million. Research and development in special metals and processing have resulted in the establishment of a completely integrated steel mill, the Allied Products Division.

Products from the mill, including limited quantities of special alloy melts of precise specifications, precision-rolled strip and drawn wire, are available to other manufacturers.

The Problem—But defense work is still regarded a short-term crutch, and officials would like to see a greater proportion of their business return to watches. Watch sales in 1951 of the four largest producers—Elgin, Hamilton, Bulova and Waltham—accounted for all but 6 per cent of their total revenue, according to a Tariff Commission report. In 1953 watch sales accounted for only 32 per cent of the total revenue.

What effect President Eisenhower's increased tariffs on imported watches will have on the sale of domestic watches will not be apparent until next year, says J. G. Shennan, Elgin's president. Immediate progress will be retarded by high inventories of imported watches.

Manpower Picture—Another factor in the tariff situation is manpower, says the Elgin president. With the industry operating at only 40 to 45 per cent of its watchmaking capacity, the manpower supply that might be needed in all-out defense is jeopardized. It is hoped that the equal competition afforded by the new tariffs will permit watch companies to rehire skilled workers.

Kaiser's New Aluminum Foil Mill Highlights Fat Demand for Thin Material

ALUMINUM FOIL is rolling into industry and households at a promising pace.

Industrywide shipments are averaging more than 11 million pounds a month in 1954, compared with a monthly 7.5 million pounds just four years ago.

One of the latest additions to capacity is the 60-inch foil mill in operation at Kaiser Aluminum & Chemical Corp.'s Permanente, Calif., plant.

Profile of a Mill — Built by Loewy Hydropress Inc., the new Kaiser foil mill can reduce the material's thickness from 0.026 to 0.00025-inch at speeds up to 3000 feet per minute. Foil up to 54 inches wide can be made on the four-high mill—the widest made in the West and equal to the widest produced anywhere in the country.

While everyone is familiar with the older packaging applications of aluminum foil—like cigarette, gum and candy wrappers—there are many other new and less familiar ones. Nearly every radio, telephone and television set has condensers in which aluminum foil is an integral part; many buildings are insulated with aluminum foil; food packages for myriad products contain aluminum foil.

Wedging In—Aluminum foil is wedging its way into many applications through laminations to paper, cardboard, cheesecloth or plastics. Bakers, for example, are using 0.00035-inch aluminum foil laminated to cardboard with an adhesive that stands oven temperatures. The military requires large quantities of a foil-cheesecloth-type laminate for packaging.

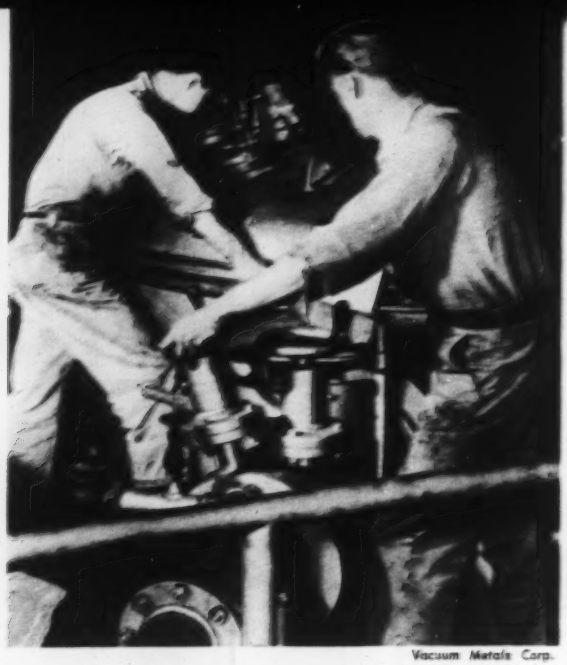
Aluminum foil is now being printed commonly by the rotogravure, flexographic and letterpress processes. Printers have found that foil printing is relatively simple; that there is a growing market for cards, calendars, displays, signs and novelties printed on foil laminates.

Doubled Over—To maintain accurate reduction in producing lighter gages of aluminum foil, such as cigarette package foil, the metal is run through the mill double.

In this process, the inner surface of each sheet receives a satiny matte finish, the outer surface a gleaming shiny finish.

This spooler-separator machine can do either of two jobs equally well: It can slit the aluminum foil, as shown below, or it can separate foil sheets after the metal has been run through the mill double at Kaiser's Permanente, Calif., plant

Vacuum Metallurgy Shifts from Lab To Production Line



Vacuum Metals Corp.

The process is not new, but its practical application is. Best potential uses are in superalloys, precision and instrument bearings and electronics

"WHERE should we use vacuum metals and why?" a growing number of sales executives are asking.

Vacuum metallurgy is only beginning to reach toward its potential applications, say producers. A wide range of metals is available for vacuum melting, and producers believe they can improve characteristics of such varied metals as aluminum and nickel.

Achieve Purity—New vacuum melting furnaces carry out melting and casting operations in a vacuum chamber. Lack of atmosphere prevents formation of oxides and nitrides, greatly reducing impurities. Result is bolstered fatigue resistance, greater tensile strength, higher heat resistance, ductility and resilience and improved anticorrosive qualities.

Production of vacuum metals is now about 20 to 25 tons a month. Next year's total should be considerably higher. In March, 1954, specialty steelmaker Crucible Steel Co. of America, Pittsburgh, joined with National Research Corp., Cambridge, Mass., to develop the production at Vacuum Metals Corp., Cambridge, now a jointly owned subsidiary.

Moving Production—VMC will move melting facilities from Cambridge to Crucible's Syracuse, N. Y., plant by year end. Late this year, or in early 1955, VMC will install a 2000-pound-capacity furnace at Syracuse. This will be the largest installation of this type of unit.

Size of furnaces and volume of production is rising at other plants. Universal-Cyclops Steel Corp., Bridgeville, Pa., expects to use vacuum melting processes in production of tool steels, high-temperature alloys and stainless steel. That firm now has a new 1000-pound furnace in operation.

More Producers—Carboloy Department, General Electric Co., Detroit, is producing a new alloy by vacuum melting. Vanadium-Alloys Steel Co., Latrobe, Pa., will convert the alloy ingots into bars, strip, sheet and other commercial shapes. Utica Drop Forge & Tool Corp., Utica, N. Y., is installing a 1000-pound-capacity furnace for melting and centrifugal casting of high-temperature alloys (STEEL, Aug. 16, p. 102).

Other firms are exploring characteristics of vacuum metals. Westinghouse Electric Corp., Pittsburgh, will install a 1000-pound furnace at its Blairsville, Pa., plant early next year. Use will be mainly for development and research.

Cost Problem—Currently, cost of vacuum metals restricts applications to those that can't be handled satisfactorily by other metals. This includes demands for metal with high heat resistance in turbine blades and bearings of jet engines. Vacuum metal in ball bearings cut rejections from 40 per cent to 5 per cent at a midwestern plant.

Bright Prospects—"The best potential fields for vacuum-melted products are in superalloys, precision and instrument bearings and electronics," says George W. Stamm, assistant to vice president-sales at Crucible.

"Vacuum metals will be particularly valuable in high-temperature applications," say Universal-Cyclops spokesmen.

The familiar bugaboo of cost prevents rapid expansion of applications. High price, newness of the metal and lack of evaluation of its characteristics are present drawbacks. Against this, producers pit greater production and increased research. That's how they expect to cut costs and answer fabricators' questions about using the metal to advantage.

Sales of Metal Toys Soar As High-Flying Stork Brings More Customers

Total sales will reach $1 billion this year. Metal toys will bring in about $210 million. Nearly 200,000 tons of steel will be used to make toys for nearly 41.5 million children

Toy Manufacturers of the U.S.A. Inc.

TOY SALES at retail level will enter the $1-billion sales bracket this year, and manufacturers' sales will approximate $500 million, compared with $450 million in 1953.

Consuming nearly 200,000 tons of steel, mostly sheet and strip in light gages and a goodly volume of wire spring steel, metal toy sales with producers will hit about $210 million, compared with slightly over $180 million in 1953 and $160 million in 1952.

Prospective Customers — Toy sales soar with the stork, a high-flying bird who delivers four million new customers annually. There are nearly 18 million children of preschool age, 1 to 4 years, and nearly 23.5 million 5 to 12 years—a total of 41.5 million children 12 and under.

The most basic metalworking process used in production of metal toys is stamping. Most manufacturers design their own dies, operating integrated tool and die shops. Close tolerances are maintained, and for most electrically operated toys, precision work is of a high degree.

Trains for Junior—A substantial volume of metal toys is wheel goods, many designed to scale. Electric trains are ultimate goals for millions; both Junior and Pop go for trains produced in detailed realism covering every type of rolling stock.

While the bodies of most cars are molded plastic, steel strip is used for most locomotives, tenders, wheels, track signal towers, bridges and most nonrolling accessories. For tracks, considerable carbon wire is used to support tee rails and conduct electric current. Electric trains are large users of transformers, too.

Precision Work—Many mechanical educational toys have electrical power and controls. Erector sets are among the most popular construction toys. These sets have tolerances as close as five one-thousandths of an inch. Numerous erector sets are designed with aluminum base plates, but the balance is steel, stamped and liberally perforated.

Aluminum is second to steel in metal consumption. Molded plastics are making some headway in toy volume, but in new fields rather than inroads on metal goods.

Volume Up—Metal toy manufacturers' volume is 10 to 15 per cent ahead of 1953, partly because organizations like Toy Manufacturers of the U.S.A. are having success in pushing sales for occasions other than Christmas. While the Yule season is still the retailing peak, the seasonal nature of the toy business is no longer so marked. Birthday sales are especially important. Every 24 hours some 62,000 youngsters in America celebrate this occasion.

About 1200 firms produce toys. Work on new designs for 1955 will start in January (range of metal toys will be larger next year). The toy show in March is the big annual sales pitch for manufacturers; orders stemming from that build up to the production peak in September and October.

Increasing Costs—Toy manufacturers are experiencing higher costs in labor, materials, freight and tooling. They have increased prices, but in most cases are absorbing part of these higher costs, since competition is notoriously sharp. Sales in all price ranges are ahead of last year, notably quality metal goods.

Imports are not a serious factor, especially in metal lines. They will be about $13.5 million this year, or about the same volume as 1953. Of this total, metal toys and figures will be valued at about $2.7 million.

By E. C. KREUTZBERG *Washington Editor*

Watch Your Congressman: How He Votes Shows Where He Stands

LOOK FOR knock-down-and-drag-out Congressional elections this year. The New and Fair Deals are out to make up for the ground they lost in the session just ended.

Led by Big Labor and other so-called "liberals," the name-calling has started. A sample was the questioning of the President's good faith in ordering private power into TVA to replace TVA power going to the AEC's Paducah, Ky., plant. (It will be supplied by a syndicate in which a golfing friend of the President's, Bobby Jones, is interested.)

Turnabout—The "outs" and the more liberal "ins" have given plenty of warning what they propose to do if they get control of the next Congress. They want to overturn the present "millionaires' tax bill," amend the Atomic Energy Act to put AEC in the public power business alongside TVA and tighten the already stringent patent provisions of the revised law. They're stumping to reverse the policy of "selling out the farmer." They plan a huge program of public spending to promote full employment. They want Big Centralized government in contrast to the Eisenhower policy.

A lot of men running for Congress will be talking out of both sides of their mouth during the campaign. Voters are likely to be more confused than helped.

Criteria for Labor's Support . . .

There is one sure indication of the political leanings of members of Congress running for re-election: The record of how they voted on key issues. It's the acid test Big Labor uses. It supports those running for re-election this year who voted "right" in the 83rd Congress, blacklists those who voted "wrong."

Fortunately constituents back home can easily learn for themselves just what their senator or representative did on national issues in 1953 and 1954. Congressional News Features, Washington, has compiled a record showing how each representative and senator responded in every roll-call vote. The charge per record of individual congressmen is $7.50 to clients, $20 to nonclients.

Scorecard on an Amendment . . .

STEEL has selected a roll-call vote (on the Atomic Energy revision act) that tells a lot. You will recall that filibustering senators won at least a partial victory at the expense of the majority. In this debate the key vote was on the Johnson amendment, which, finally, in the effort to get at least some kind of a bill pased, was carried 45-41.

The amendment authorizes the AEC to sell power generated in experimental work and empowers the AEC to license other government agencies to construct their own atomic reactors for the generation of power for their own use or sale. It also authorizes the AEC to sell incidental power generated in its research work and gives cooperatives and municipalities first call on this power. (See the box for the way the senators voted.)

Following the vote it was freely stated by public power senators that they were not satisfied. They warned that they are going to try to rewrite the act next year to make the AEC a full-fledged power agency and tighten up the patent provisions. Thus the vote on the Johnson amendment affords an accurate index on those senators who stood firm in upholding the principle of private enterprise and who can be expected to stand firm on the same issue if re-elected.

Senators Show Their Colors . . . in AEC act voting

YEAS—45

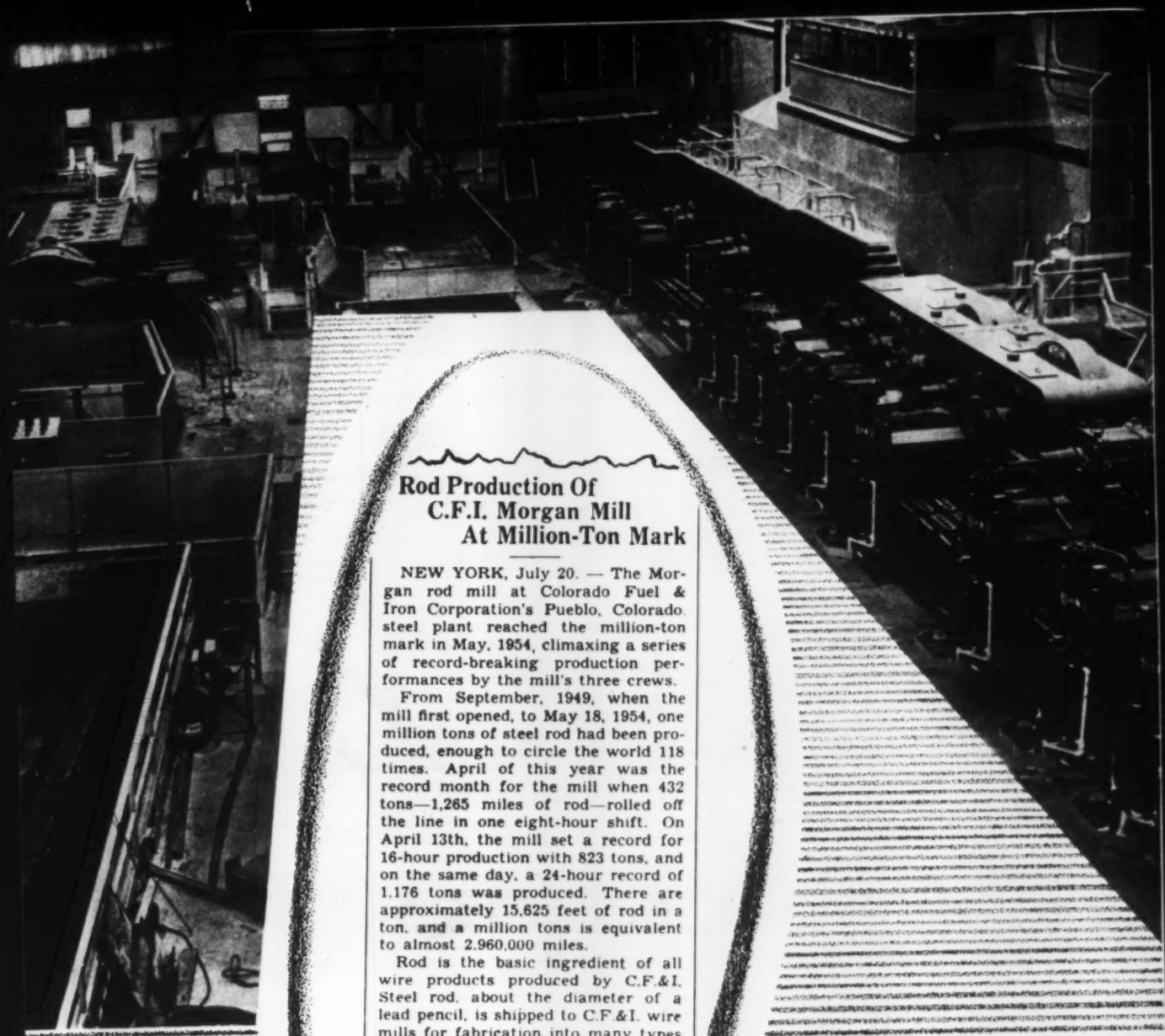
Anderson	Hayden	Mansfield
Byrd	Hennings	Maybank
Case	Hill	McCarran
Chavez	Humphrey	Monroney
Clements	Jackson	Morse
Cooper	Johnson, Colo.	Mundt
Daniel	Johnson, Tex.	Murray
Douglas	Johnston, S. C.	Neely
Dworshak	Kerr	Pastore
Eastland	Kilgore	Robertson
Fulbright	Langer	Russell
George	Lehman	Sparkman
Gillette	Lennon	Stennis
Gore	Long	Symington
Green	Magnuson	Young

NAYS—41

Aiken	Ervin	Payne
Barrett	Ferguson	Potter
Beall	Flanders	Purtell
Bennett	Frear	Reynolds
Bricker	Goldwater	Saltonstall
Bridges	Hendrickson	Schoeppel
Burke	Hickenlooper	Smathers
Bush	Holland	Smith, Me.
Butler	Ives	Smith, N. J.
Carlson	Jenner	Thye
Cordon	Kennedy	Upton
Crippa	Knowland	Watkins
Dirksen	Martin	Wiley
Duff	Millikin	

NOT VOTING—10

Bowring	Kuchel	Welker
Capehart	Malone	Williams
Ellender	McCarthy	
Kefauver	McClellan	



Rod Production Of C.F.I. Morgan Mill At Million-Ton Mark

NEW YORK, July 20. — The Morgan rod mill at Colorado Fuel & Iron Corporation's Pueblo, Colorado, steel plant reached the million-ton mark in May, 1954, climaxing a series of record-breaking production performances by the mill's three crews.

From September, 1949, when the mill first opened, to May 18, 1954, one million tons of steel rod had been produced, enough to circle the world 118 times. April of this year was the record month for the mill when 432 tons—1,265 miles of rod—rolled off the line in one eight-hour shift. On April 13th, the mill set a record for 16-hour production with 823 tons, and on the same day, a 24-hour record of 1,176 tons was produced. There are approximately 15,625 feet of rod in a ton, and a million tons is equivalent to almost 2,960,000 miles.

Rod is the basic ingredient of all wire products produced by C.F.&I. Steel rod, about the diameter of a lead pencil, is shipped to C.F.&I. wire mills for fabrication into many types of wire products, including nails, fencing, staples, screen, and wire cloth.

From
AMERICAN METAL MARKET
Issue of: JULY 21, 1954

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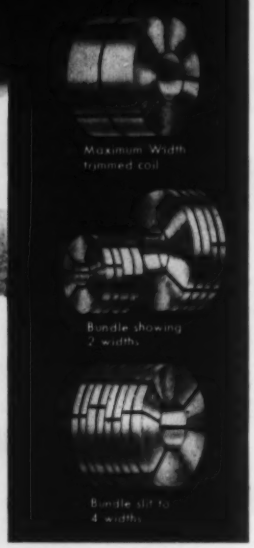

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ALAN WOOD STEEL COMPANY

CONSHOHOCKEN, PA.

Home Heating Equipment . . . The Hot and Cold of It

Sales of Residential Central Heating & Air Conditioning Equipment
(factory sales in millions of dollars*)

	1950	1951	1952	1953	1954
HEATING EQUIPMENT	$385.5	$314.3	$329.6	$345.9	$347.0
AIR CONDITIONING EQUIPMENT	$2	$5	$8	$28.5	$45

*Compiled by STEEL.

HEATING EQUIPMENT manufacturers have plenty of reason to rest on their oars. But, they aren't.

New housing starts—prime business indicator for the furnace industry—still are at a rate of a million annually.

Replacement markets are being sold by the bale through all sorts of consumer magazines.

Dollar sales of central heating equipment continue good as shown in the chart above.

Central air conditioning is catching on rapidly and sales are zooming as shown above.

No Gentlemen — Yes, central heating equipment makers have much to be satisfied about. But instead there is a lot of rough elbowing going on in the industry.

Primarily that's because each manufacturer knows that industrywide productive capacity is about 1.5 to 2.0 times the industrywide demand. Each manufacturer knows, too, that as defense business runs out more productive capacity will be available for furnace production. Result is that each heating equipment manufacturer is engaged in a struggle with other heating equipment manufacturers to capture and maintain a "fair share" of the market.

No Salesmen—To further understand the lack of self-satisfaction in the furnace industry, it's necessary to know: No single company nor small group of companies predominates the market; most have less than national distribution; brand name recognition is low; and, finally the fellow who sells the end product is a craftsman, not a salesman.

All conditions add up to "too little merchandising and too much order taking and price selling." Combating those old evils, manufacturers are now grubbing for better dealers, filling out product lines and bearing down on quality. The key word in heating equipment these days is "merchandise."

No Moss—A final effect of the fight to hold the market in home heating equipment is the rash of new products. For years old methods and old models got by simply because there was no need for anything different. Postwar housing has brought out different demands. Basementless housing means a rise in use of forced air, down-flow furnaces; oil and gas continue to snuff out coal as a fuel; warm air heat—postwar champion heating system—is being challenged by oldtimers like wet heating systems (such as in Iron Firemen Co.'s new Selectemp system) and newcomers like the heat pump (such as marketed by GE). Development-type housing has furnished a market for mass produced furnaces, produced by mass production methods such as stamping, where slower manufacturing processes sufficed before.

Then, of course, there is central residential air conditioning. Says Carrier Corp. about the entry of air conditioning into the residential market: "The air conditioning companies and their experienced dealers have always been basically concerned with proper air distribution to get effective and draftless air circulation and balanced temperatures. The air conditioning companies' move into the residential market will increase concentration on good layout and installation of systems. . . present sales curves indicate that within a few years virtually all new homes built will be completely air conditioned at the time of construction. When that point is reached, air conditioning will have virtually taken over the home heating business."

No Bets—Many heating men regard that statement as a challenge rather than a prophecy. But, whether or not it comes true, it's just one more reason why there is little complacency among home heating equipment manufacturers in 1954.

A Small Firm Finds a Quick, Economical Way To Diversify

Here are a few of the things an outside design firm can tell you:

- **Cost of developing the product**
- **Product's utility, sales appeal**
- **Unit, dollar-volume possibilities**
- **How product fits into present setup**
- **Availability of distribution channels**
- **Strength of competitors**
- **History of similar products and patent situation**

Source: Designers for Industry.

Stow Mfg. Co. needed a new product. They hired an outside design firm to design it for them

DIVERSIFICATION is within reach of the Davids as well as the Goliaths of industry. Ingenuity and knowing where to get help can make up for lack of capital, shortages in engineering and market research manpower.

Take the case of Stow Mfg. Co., Binghamton, N. Y. (116 employees). The company was faced with a loss of government contracts. It wanted a new product. Here's how it got it:

The Starting Point—Stow's main product line is flexible shafts; it also makes a line of flexible shaft concrete vibrators. Management knew the easiest way to get quick sales for a new product was through its vibrator distributors. So they sent them a list on 20 products already on the market that Stow could make. Distributors were asked to list in order of preference the four products they thought would sell best.

A rotary trowel for finishing concrete came out on top. But who would design it? The machine is complicated and some patented features had to be avoided. Stow also wanted new features with sell in them. Distributors wanted the machines in a hurry.

Stumbling Blocks—Stow's small engineering staff was already busy with regular work. If they designed the new product, it meant hiring more engineers. If they went to an outside firm, the job would be done quickly but to the tune of a large cash outlay, and Stow would not have at-home supervision on the job.

Several outside firms were contacted. One, Designers for Industry, Cleveland, suggested a technical survey. This operation, done by DFI's own staff, includes market and applied research, plus a patent search. Clients are told what should be made, who will buy it, what price customers will pay and how many can be sold. And Stow wasn't obligated to hire DFI for the design job.

Survey Results — Stow also wanted to know what new features and improvements users wanted. Distributors of other makes of rotary trowels knew the answers. As an independent firm, DFI was in a much better position to get them.

When the results of the survey were shown to Stow's top management (headed by C. F. Hotchkiss, president) they asked DFI to present a proposal for one size unit, including designing and building the prototype, testing it and making production drawings.

Keeping Some Control — After checking the proposal and its itemized costs, Stow gave the design job to DFI with the stipulation that the design would not infringe on any patents. Costs for design were limited to what DFI had estimated. That gave Stow some control, since it knew that only a specified sum would be

spent before the design was approved.

As far as the design itself went, it was left to DFI. Stow merely said it wanted a machine superior to those already on the market, including certain specified features—such as easy conversion from gasoline to electric power. By not restricting the design, Stow hoped to get (and got) many new ideas in the finished product.

The Go-ahead—After the preliminary work, Stow suggested a few changes. They were talked over with DFI; some were decided on; and DFI was given authority to go ahead on assembly and layout drawings. Manufacturing cost was to be based on Stow's factory cost for labor and materials.

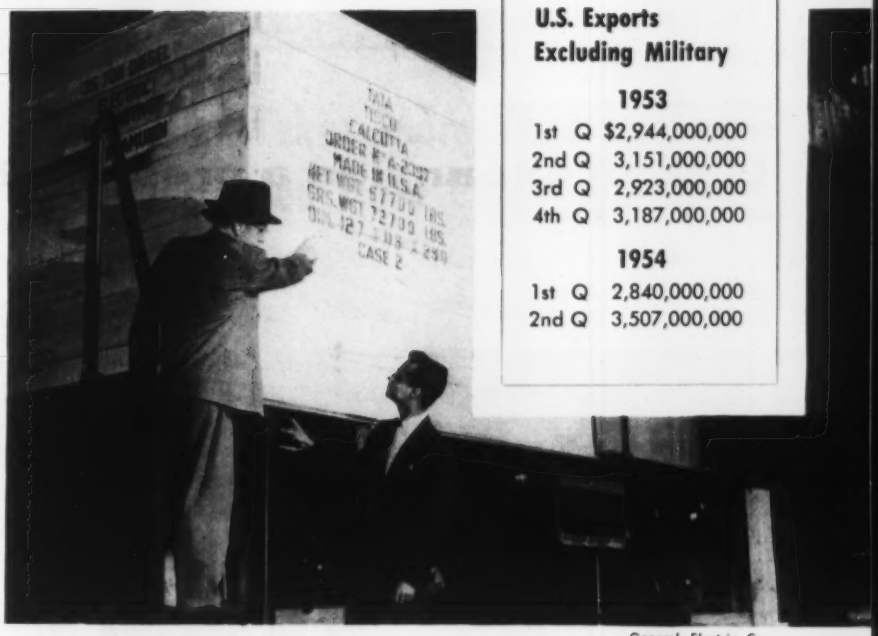
Next came the prototype. Details of its design were given to Stow's sales force so they could discuss them with dealers. Several changes were suggested. For example, the make of engine was changed. Dealers said the machine would not sell with the proposed engine: It wasn't well-known to the trade.

Orders Come In—The prototype was tested and compared with competitors' models on the same job. Some further changes were suggested. A picture of the prototype was sent to distributors who suggested more changes—and also began sending in orders.

At this point Stow decided to do its own production drawings rather than let DFI do them as originally planned. It was Stow's belief that its own staff could do them faster because they knew what machinery was available.

Production Starts—One machine was completed from production drawings. It was tested thoroughly and, when Stow was satisfied, they designed and ordered jigs and fixtures and started an initial production run. The first batch of machines are to be put in the field and thoroughly tested there before full production starts.

DFI's services cost Stow a little over $10,000. Was it worth it? Stow's people think so. They have what they consider an excellent machine, and they have it faster than if they had designed it themselves. (For a more detailed article on diversification, see STEEL, Sept. 13, p. 113.)



General Electric Co.

U.S. Exports Excluding Military

1953		
1st	Q	$2,944,000,000
2nd	Q	3,151,000,000
3rd	Q	2,923,000,000
4th	Q	3,187,000,000
1954		
1st	Q	2,840,000,000
2nd	Q	3,507,000,000

Second-Quarter Exports Reverse Trend: Commercial Shipments Rise

U. S. NONMILITARY exports bulled their way through second quarter of 1954. Coming on the heels of a weak opening quarter, they pushed the first-half total to $6.3 billion.

Result: First half, 1954, nonmilitary exports amassed the best half-year total since early 1952.

Mostly Happy—Nearly all major nonagricultural export commodities shared in the second quarter rise. The three exceptions, according to the Commerce department, were machine tools, coal and petroleum products.

Especially strong first-half records were racked up in automobiles (1st half, 1953—$521 million; 2nd half, 1953—$442 million; 1st half, 1954—$567 million); special machinery (1st half, 1953—$386 million; 2nd half, 1953—$389 million; 1st half, 1954—$409 million); chemicals (1st half, 1953—$380 million; 2nd half, 1953—$420 million; 1st half, 1954—$468 million); and nonferrous metals and ferroalloys (1st half, 1953—$68 million; 2nd half, 1953—$108 million; 1st half, 1954—$157 million).

Add the Military — Including grant-aid military exports, the total in first half, 1954, amounted to $7.7 billion; slightly above the July-December, 1953, total but 5 per cent under that of January-June, 1953. Military exports were $1.3 billion in first half, 1954.

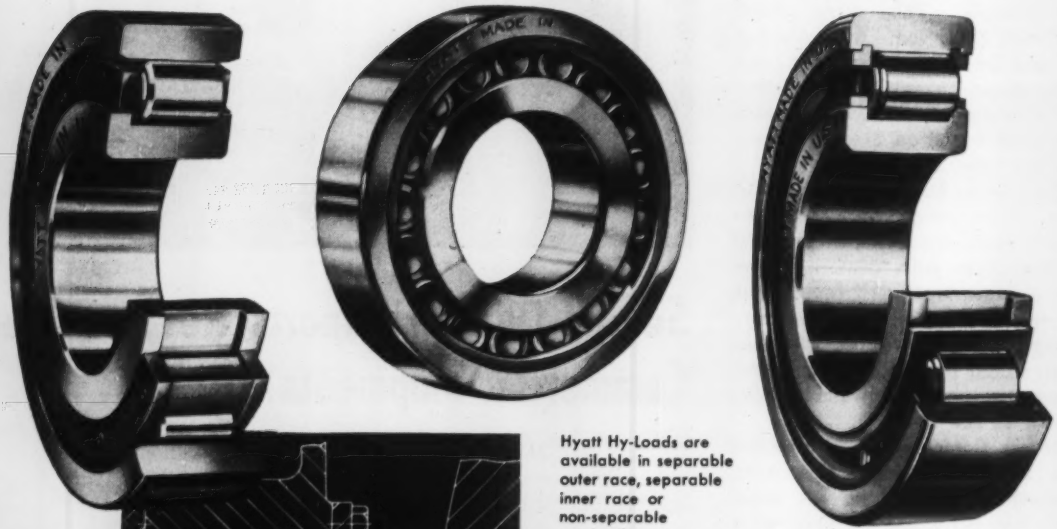
Imports rose in the second quarter, 1954, too—$2.7 billion compared with $2.5 billion in first quarter, 1954; $2.6 billion in fourth quarter, 1953; and $2.7 billion in third quarter, 1953. The increase in imports didn't keep pace with rise in exports, however. The rate of accumulation of gold and dollar assets by foreign countries slowed down in first half, 1954.

Foreign Trade Notes

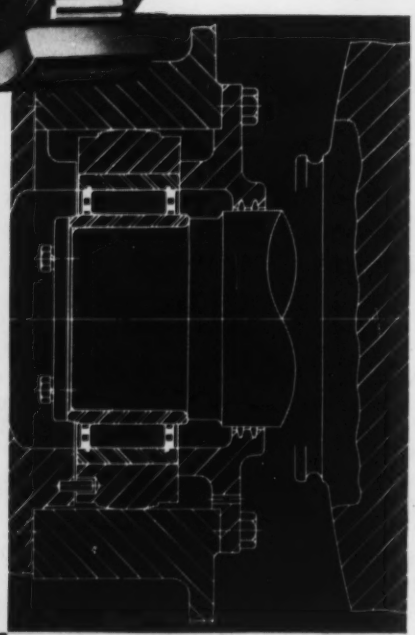
British steelmakers are reporting closing order books for the remainder of 1954 . . . German mills are booked through 1954, too . . . Bright note from the French steel industry: June orders bulked one-third greater than the monthly average for 1951, the best postwar year for the French industry . . . The Belgian metalworking industry is gradually working its way out of its early-1954 slump. Employment has risen to 173,247 in June, from 171,354 in May and from 168,334 in January.

Is shaft expansion a problem?

HERE'S HOW HYATTS HELP...



Hyatt Hy-Loads are available in separable outer race, separable inner race or non-separable construction.



Be sure to visit our booths 286-287 at the 1954 Iron and Steel Exposition, Cleveland, Ohio

Check the drawing at the left. The bearing is a Hyatt Hy-Load, and because the inner race is cylindrical, the shaft it supports is free to move axially—thus allowing for shaft expansion without cramping the bearing or distorting the shaft. Obviously, this is only one of many ways in which Hyatt bearings can be used to reduce costs as they reduce friction, but it's a good example of why so many designers throughout industry keep their Hyatt catalogs within easy reach.

For further details write for Catalog 150 or call your nearest Hyatt representative.

HYATT ROLLER BEARINGS

STRAIGHT ◊ BARREL ◊ TAPER ◊

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

Chrysler Takes More Than Its Share Of Increased Auto Export Business

DETROIT

CUSTOMIZED Plymouths are normally considered about as common as nudists at the North Pole.

But you may be interested to know that Plymouths with DeSoto and Dodge grills and de luxed interiors with leather upholstery are being turned out in quantity. What's more, it's being done by the Plymouth factory right here in Detroit.

Double Takes — The sight of these vehicles coming down the line with regular Plymouths gives the agonizing first impression that there aren't any inspectors at the plant. But as you may suspect, these vehicles are built for a special purpose—export. The cars are known as the DeSoto Diplomat (shown above) and Dodge Kingsway, two pets of the Chrysler Export Corp.

This organization, as the name suggests, contributes to the sports car movement by getting as much Detroit iron as possible out of the country. Two plants are operated by Chrysler at Antwerp, Belgium, and Adelaide, Australia. Fifteen other plants are operated under license by distributors. The rest of the cars are shipped abroad from this country and thereby hangs our tale.

Hybrids—Chrysler Corp. products are sold overseas in all except the Iron Curtain countries. Unlike Ford and GM, which may have ten or twelve competing distributors in a given country, Chrysler has only one for each line. Those lines include Chrysler - Plymouth, DeSoto and Dodge. Chrysler believes that the package franchise is more desirable than competing distributors, which brings us to the Plymouth-DeSotos and Plymouth-Dodges.

The package deal given distributors in these small territories is set up like this: One distributor will handle the normal DeSoto, a Plymouth-base DeSoto and a Dodge-base DeSoto truck; another will be given the Dodge as we know it, the Plymouth-base Dodge Kingsway and the Dodge truck; while the third will be given the Chrysler and Plymouth as we know them and under the same name with the Dodge-base Fargo truck.

Underneath It All—In all three cases, the units of the package bear a family resemblance through grill and trim alterations. It is interesting to note, incidentally, that in foreign countries although the common base of the cars is generally known, some owners will swear by the DeSoto-Plymouth as opposed to the Dodge-Plymouth or the standard Plymouth. The fact that owners take this attitude in spite of the fact that the basic cars are identical is an absorbing problem in psychology.

This merchandising setup actually gives Chrysler three cracks at the potential Plymouth customer, an interesting possibility that might be used to advantage in this country. For if you don't like the Plymouth treatment of the Plymouth, you might like the Dodge-Plymouth or the DeSoto-Plymouth. The idea has been kicked around at Chrysler before and might well be pulled out as competition stiffens. With style assuming the importance it has today, every variety means another chance to get Plymouth back into the click clique, and that pretty little DeSoto-Plymouth would unhinge plenty of wallets.

Production Smorgasbord — The styling jobs for the different models are all done here in Detroit, and the parts are purchased from suppliers or made at Chrysler just like conventional models. The production implications are intriguing, however. The cars are run down the conventional Plymouth line with a list of special equipment as long as your left leg. Included may be heavy duty springs, tropical radiator cores, heavy duty shock absorbers, short wave converters for radios, right-hand drive, speedometers calibrated in

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kilometers, leather upholstery, six-ply tires, low-compression engines and even locking gas caps where expensive fuel is apt to be stolen.

The reasons for most of these options are obvious. Heavy suspension and six-ply tires are utilized on rugged roads; tropical radiator cores where extra cooling is required; low-compression engines where higher octane fuels are not available; and leather upholstery where mildew is a problem. On the production line, these mavericks require special inspectors to do the checking but Plymouth people are used to those idiosyncrasies and slip-ups are rare.

In and Out of English—Behind the cars at Chrysler Export Corp., a staff of 40 work in the translation department alone. They put correspondence into English before it is forwarded to the proper department, retranslating answers into the proper language from English. Despite barriers of language and little confounders like the New York dock strike not long ago, exported American autos are doing all right abroad, which makes it all worth while.

During the first six months of this year, the industry increased exports to 116,921 cars, a rate running 10.8 per cent over 1953, when 186,262 cars were exported. Chrysler Export Corp. is happy to report its gain is 15.2 per cent, and that overseas it enjoys a considerably better proportion of the market than its quota here against Ford and GM.

Selling Qualities—Responsible for the popularity of the American car abroad is believed to be the reliability and engineering that make it suited for almost all conditions. That makes the cars sell despite the fact that you'll pay the equivalent of $6,000 for a Plymouth in Spain, for example.

Needless to say, the American car abroad is a luxury item, though it is not a prestige car. The prestige car abroad is the Mercedes or Rolls, though Packard still maintains much of the prestige abroad it held during the 1930's when LeBaron was coaching. The foibles and fallacies of American design are accepted in the interests of luxury and reliability, though some interesting situations arise.

Color Concepts—One has been the increased use of color in American products. The Plymouth found its flamboyance a sizzling dud in normally flamboyant France, which goes for black. But in Latin America the same jobs were gobbled up.

Another interesting problem lies in the writing of appropriate advertising copy for foreign markets, which is also done in this country. The American idiom with which the advertising copy writer likes to ply his trade is unfortunately not directly convertible into other languages. "Lightning acceleration" means nothing to the German customer.

Tariff Reaction—Among other little items that make the export business interesting is the penchant of pressure groups to hoist protective tariffs in this country. It is reported that sales in Switzerland took a marked drop following the adoption of the Swiss watch movement tariff by this country, and some stores in that country displayed signs in their windows, "We buy no American goods."

But the export auto business is holding up well, for plenty of people abroad do.

Vice Versa

Looking at the other side of the coin, a new and highly interesting import is the Austin-Healy 100 sports car. Perhaps you read recently that a modified version of this car turned over 190 mph at Bonneville, an impressive figure though it was only slightly recognizable as an Austin-Healy.

The production version of this little rubber-peeler is no tinker-toy. It represents an interesting package if you're considering the sports car plunge. The 90 horsepower, Austin 4-cylinder engine, which has bores like milk buckets, will push production models close to 110 mph and deliver about 25 miles per gallon cruising at 80 mph.

The car comes equipped with an electrically controlled overdrive unit and three-speed gearbox. Bypassing the governor gives six speeds forward and the torque of the engine produces 0-60 mph figures in around 12 seconds, though some have reported 10.5 seconds for the feat. Handling is head and shoulders over anything produced in this country, though we'll still take the MG on a tight corner.

The center portion of the body, including trunk and hood, are aluminum with the outer fender halves and doors of thin steel. Coachwork and finish are not of the MG or Jaguar standard, though the enthusiastic owner who accepts the car as somewhat in kit form can finish the work the factory neglected.

Ride is surprisingly good for a sports car and the car holds the road well at high speed. When you consider the car delivers with no-foolin, wire wheels, tonneau cover and heater in Detroit for about $3250, coupled with its looks, the Austin-Healy 100 is a mighty seductive sports car package.

We know . . . we got seduced.

Auto, Truck Output

U. S. and Canada

	1954	1953
January	594,789	614,000
February	573,801	628,017
March	672,485	752,149
April	676,233	782,491
May	621,249	684,843
June	623,732	713,778
July	543,540	756,592
August	523,790	640,186
September		605,228
October		651,153
November		457,852
December		529,588
Total		7,815,877

Week Ended	1954	1953
Aug. 14	119,208	156,526
Aug. 21	121,736	163,635
Aug. 28	113,496	152,866
Sept. 4	110,995	132,574
Sept. 11	84,556	122,863
Sept. 18	79,000*	146,912

Source: Ward's Automotive Reports.
*Estimated by STEEL.

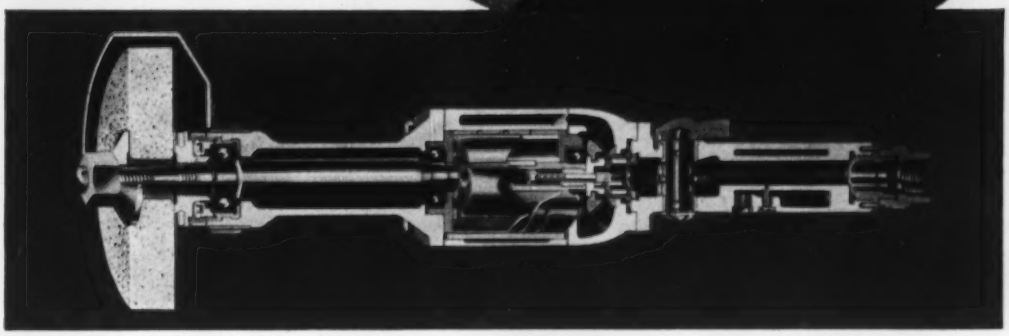
Chrysler Employment Going Up

Chrysler Corp. estimates it will have 84,000 employees in the Detroit area by mid-November, over 30,000 more than it had when the 1954 production run ended. The high point so far this year was 88,000 in January, when some 66,000 cars were turned out.

If Chrysler's plans materialize, cars should be completed at a rate of over 60,000 a month by December—even higher in early 1955.

With New Departures—
ROTOR GIVES UPKEEP THE "AIR"!

Rotor Tool Company design utilizes three New Departure **ball** bearings. Front bearing is wider to give greater surface on shaft and housing to withstand vibratory loads.

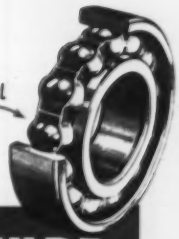


Holding the line against maintenance downtime! Three New Departures in the Rotor Tool air grinder need no adjustment . . . cut lubrication requirements to virtually zero.

These New Departure double-shielded bearings are protected from foreign matter. They have the high capacity to carry radial and thrust loads . . . to withstand the shocks of hard use and rough handling. At the same time, cool-running New Departure **ball** bearings maintain accurate alignment and assure maximum power at the grinding wheel.

You can build these advantages into *your* product, too. Talk with your New Departure engineer—*today!*

NOTHING ROLLS LIKE A BALL



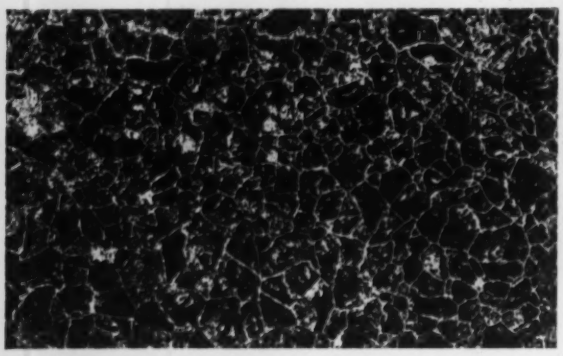
NEW DEPARTURE

BALL BEARINGS

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT
Plants also in Meriden, Connecticut, and Sandusky, Ohio
In Canada: McKinnon Industries, Ltd., St. Catharines, Ontario

4 reasons why TIMKEN® steel machining bars give you such uniform machinability

1. IN JUST 40 SECONDS this spectrometer tells us the exact chemical composition of a heat of Timken® steel. Results are flashed back to the furnace so the melter can keep close control of the analysis. This carefully-controlled chemistry produces uniform composition from heat to heat—a positive help in maintaining constant machinability.

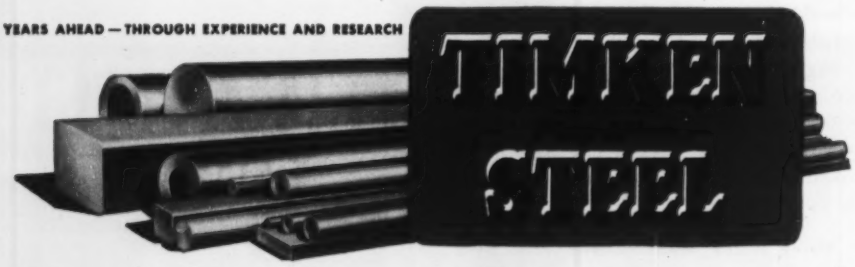


3. UNIFORM GRAIN SIZE of every heat is assured by spectrometric or microscopic examination. This is another example of the many ways the Timken Company controls uniformity at every step in production.

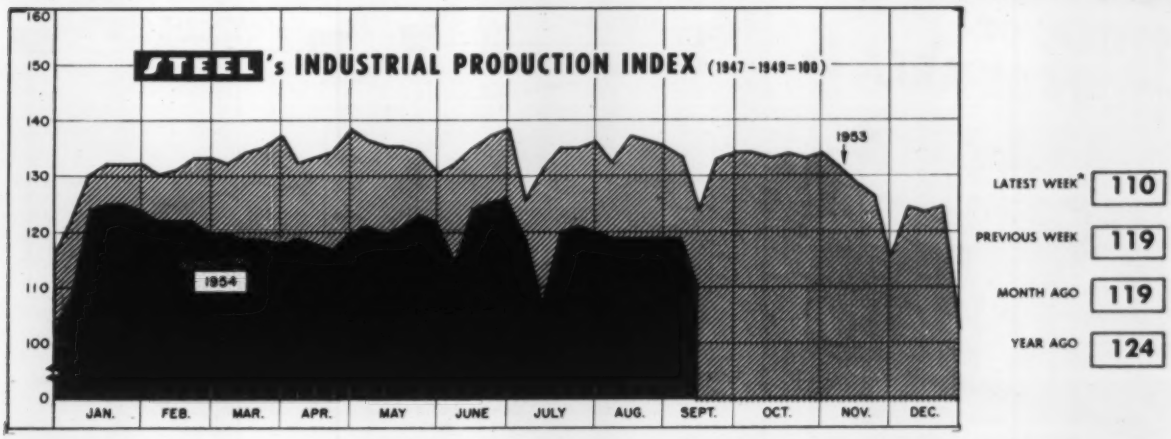
2. INDIVIDUAL HANDLING of each order enables us to adjust our conditioning procedure to suit your machining requirements. Here bars are stamped to identify the heat and ingot they came from. It's one way we can limit variation within an order as well as from order to order.

4. ANY SURFACE DEFECTS are located and removed before your order is rolled to the required bar size. It's one more step we take to make sure Timken steel machining bars give you uniform machinability. To get all these advantages, specify Timken steel machining bars the next time you order. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD — THROUGH EXPERIENCE AND RESEARCH



SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



* Week ended Sept. 11.

Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 11%.

Upturn Won't Wait for Full Inventory Adjustment

INVENTORIES have been going down, but not fast enough to suit some observers who feel that further "adjustments are necessary before industrial production will show much of a pickup." Some of the more pessimistic wouldn't be at all surprised to see a continuation of recession.

Inventories have tended to lag behind changes in production and orders, points out National City Bank of New York. In the 1948-49 recession, factory production and orders turned downward in the latter half of 1948, but stocks continued to accumulate until early in 1949. Output and orders reached their lows in the middle of 1949; inventories didn't touch bottom until the following November. This was well after production and orders turned up.

No Need To Wait—So it isn't abnormal in the current recession for the decline in inventories to lag behind the downturn in production and orders. Nor would it be surprising if this decline continues for some time after production and orders turn up. As shown in 1949, business revival doesn't need to wait for completion of factory inventory correction. In fact, the business upturn will help manufacturers work down excess stocks.

The bank says that despite an apparent "stickiness" in inventories, bringing production into line with consumption and working down stocks seem to be going ahead in much the normal way.

Everything's Grown—It is true that inventories are high, but it is also true that most other dollar measures of business, such as sales, orders and the gross national product, have risen greatly since Korea, reflecting economic growth and price inflation.

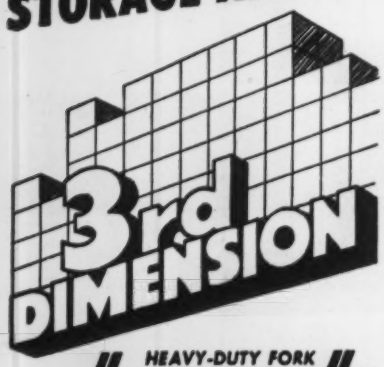
Again, when inventories are related to sales, the ratio of manufacturers' stocks to sales is not significantly higher than in comparable periods of 1948-49, and

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,580	1,502	2,060
Electric Power Distributed (million kwhr)	8,450[1]	9,087	7,963
Bitum. Coal Output (daily av.—1000 tons)	1,277	1,235	1,603
Petroleum Production (daily av.—1000 bbl)	6,025[1]	6,111	6,506
Construction Volume (ENR—millions)	$220.7	$376.7	$273.5
Automobile, Truck Output (Ward's—units)	84,556	110,995	128,863
TRADE			
Freight Car Loadings (unit—1000 cars)	636[1]	688	711
Business Failures (Dun & Bradstreet, no.)	178[1]	193	131
Currency in Circulation (millions)[3]	$30,115	$29,923	$30,479
Dept. Store Sales (changes from year ago)[3]	+13%	+1%	+1%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$13,655	$16,954	$12,803
Federal Gross Debt (billions)	$275.0	$275.0	$273.3
Bond Volume, NYSE (millions)	$10.0	$14.7	$9.2
Stocks Sales, NYSE (thousands of shares)	7,398	9,613	4,638
Loans and Investments (billions)[4]	$82.8	$83.0	$79.4
U. S. Gov't. Obligations Held (billions)[4]	$35.9	$36.1	$31.8
PRICES			
STEEL's Finished Steel Price Index[5]	194.19	194.19	189.38
STEEL's Nonferrous Metal Price Index[6]	217.4	214.9	206.9
All Commodities[7]	109.7	109.5	110.4
Commodities Other Than Farm & Foods[7]	114.4	114.4	114.7

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1954, 2,384,549. 1953 2,254,459. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

IS YOUR STOCK or STORAGE AREA in



HEAVY-DUTY FORK
LIFTRUK
5 — 7½ — 10 — 15 ton
CAPACITIES

You have your *width* and *depth* for storage and shipping areas — that's pretty much controlled — a systemized layout of stacking aisle and "unitizing" will improve efficiency — BUT —

Are you taking full advantage of that *Third Dimension* — HEIGHT?

A Silent Hoist LIFTRUK designed for heavy-duty capacity loads, will stack your materials, parts, finished products, etc., and *add many feet of usable space above your normal* stacking height. You can actually *add acres to your warehouse*, without adding a single foot of floor area! And the LIFTRUK will speed outloading at least 3 times as fast as "partload" or "lightload" methods. Write for convincing facts —

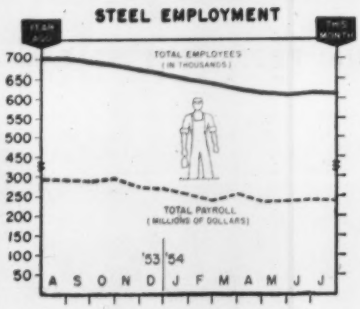
SEND FOR FREE BULLETIN NO. 77

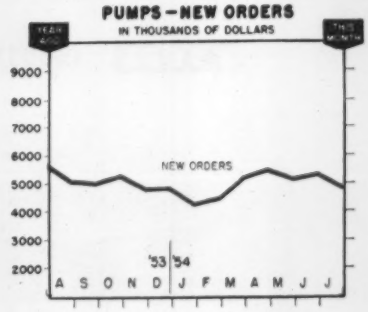
SILENT HOIST also offers other heavy-duty Materials Handling Equipment . . . including LIFT-O-KRANE, a Combination Boom Crane and Fork Lift, with separate power winch . . . write us about

LIFT-O-KRANE

SILENT HOIST & CRANE CO.
Pioneers of Heavy Duty Materials Handling Equipment
849 63rd STREET BROOKLYN 20, N. Y.

THE BUSINESS TREND





	Employment in Thousands		Payroll in Millions	
	1954	1953	1954	1953
Jan.	645	685	$251.3	$261.3
Feb.	636	685	236.6	261.3
Mar.	621	683	249.7	281.0
Apr.	609	685	232.6	278.0
May	606	685	234.4	281.0
June	609	690	236.4	282.1
July	608	696	232.8	288.1
Aug.	...	696	....	287.3
Sept.	...	688	....	283.8
Oct.	...	678	....	290.6
Nov.	...	667	....	268.5
Dec.	...	656	....	263.9

American Iron & Steel Institute.
Charts Copyright 1954 STEEL.

	In Thousands of Dollars*		
	1954	1953	1952
Jan.	4,067	5,752	5,517
Feb.	4,272	6,521	6,020
Mar.	5,093	8,255	5,925
Apr.	5,319	7,758	6,354
May	5,007	4,629	6,140
June	5,176	5,690	7,957
July	4,733	5,533	6,299
Aug.	....	4,886	5,921
Sept.	....	4,845	5,258
Oct.	....	5,097	5,534
Nov.	....	4,634	4,130
Dec.	....	4,645	6,575
Total	....	68,245	71,630

* 32 companies. Hydraulic Institute.

they have been below comparable periods of 1951-52. The bank concludes that any rebuilding of stocks will act as a positive force in recovery.

Needed: Some Hard Work—One fly in this otherwise appetizing soup, though: In 1948-49 there was still considerable pent-up consumer demand. This time, industry will have to sharpen buyers' appetites through still better products and more aggressive selling.

But the public seems to have a hollow leg, which will make the selling job a little easier. Encouraging are department store sales, off only a few precentage points from last year. Even durable goods—whose manufacturers, in general, were hit hardest during the recession—aren't far below a year ago saleswise. Signs of pick-up on the manufacturing end already are evident.

Improvement by the Yard . . .

Depressed industries can find some glimmer of better things ahead in recent activity in the textile industry, which has been off its pace even more than most other segments of the economy. Employment rose by about 100,000 from July to August, accounting for about half the total rise in nondurable goods industry employment.

Some of textiles' gains are probably due to the Army's decision at long last to give G.I.s unforms that measure up in glamour to those of the Air Force and Navy. Civilian clothes buying has picked up, too, and had its energizing effects.

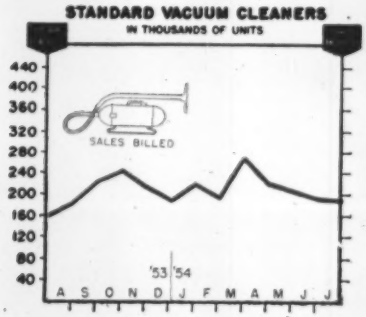
Employment Turns Upward . . .

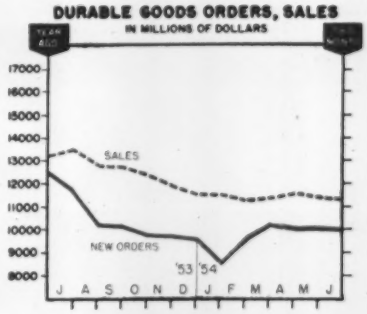
Employment in the durable goods industries is on the upswing after an extended slide. Metalworking got a share of the increase, mainly because of the electrical machinery industry which upped its employment by 30,000. Fabricated metal products also showed a rise.

The gains offset drops in transportation equipment and primary metals which are still on the downgrade. But improvement is in the offing. The end of model changeover in the auto industry and already improving steel output will help considerably.

Unemployment: Going Downhill

Nationally, employment is going up. It's no skyrocket ascent, but it's climbing and can be expected





Sales Billed—Units

	1954	1953	1952
Jan.	221,233	255,886	223,357
Feb.	199,035	246,007	230,226
Mar.	276,464	329,294	290,092
Apr.	220,849	268,548	217,169
May	209,434	252,404	216,969
June	195,781	197,506	206,939
July	193,607	159,446	188,715
Aug.	.....	188,536	222,413
Sept.	.....	227,253	237,541
Oct.	.....	249,383	292,474
Nov.	.....	216,227	254,297
Dec.	.....	190,773	249,032
Total	.....	2,781,263	2,841,803

Vacuum Cleaner Mfrs. Assn.

In Millions of Dollars*

	New Orders		Sales	
	1954	1953	1954	1953
Jan.	8,475	12,454	11,580	12,508
Feb.	9,629	12,416	11,278	12,666
Mar.	10,206	12,520	11,385	13,116
Apr.	10,021	12,702	11,502	13,398
May	10,050	13,101	11,344	13,148
June	9,965	12,392	11,318	13,166
July	.....	11,600	.....	13,410
Aug.	.....	10,139	.....	12,730
Sept.	.....	10,110	.....	12,698
Oct.	.....	9,677	.....	12,376
Nov.	.....	9,631	.....	11,867
Dec.	.....	9,567	.....	11,576

*Seasonally adjusted. U. S. Bureau of Business Economics.

to pick up speed along toward winter.

Unemployment, too, is improving. A steady decline in insured unemployment has been under way since mid-July. New claims for unemployment insurance also are heading down.

But in spite of improvements, about 5 per cent of the labor force still is unemployed, say the latest Census Bureau figures. Optimists can find encouragement even from that. Usually unemployment rises during the summer months; this summer it remained almost constant. That looks better yet when you consider the labor force is continually growing and total employment isn't far from all-time highs.

More Records in Construction . . .

Construction is one business that doesn't have to be told that times are pretty good. Expenditures and contract awards set records of one kind or another in August.

Spending hit $3.6 billion, an all-time high, according to the Labor and Commerce departments. If the present rate continues, this year's expenditures will be more than $1 billion over the record $35.25 billion spent last year.

Contract awards of $1573 million in 37 eastern states made the month the highest August in the records of F. W. Dodge Corp. It also rounded out the highest first eight months in the firm's history.

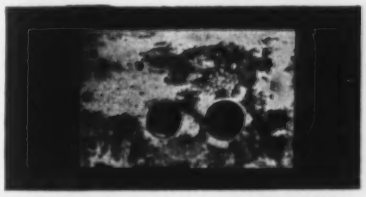
Dodge says that 1954 may see a new record for contract awards. If that happens, it will be the ninth consecutive year of gains. One of the reasons conditions look good for a record breaking year: Awards in the first 8 months averaged $1583 million; the remaining four months need to average only $1196 million to break the record.

Trends Fore and Aft . . .

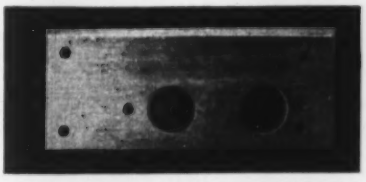
Union Carbide and Carbon Corp. hopes for an upturn in sales of ferroalloys to the steel industry beginning in October or November. Sales have been slow this year, but the firm is building up an inventory against any influx of orders . . . Passenger car registrations in the U.S. will hit over 48 million by the end of the year, according to the Bureau of Public Roads . . . Earnings of Allis-Chalmers Mfg. Co. in 1954 should be a little better than 1953, says W. A. Roberts, president. Sales will be down some. "But," he says, "we have to work hard for everything we get."

How Diebold, Inc.

keeps their SAFES SAFE from rust



This part from a Diebold safe door was covered with fingerprint neutralizer, then spotted with synthetic perspiration. In a matter of days destructive rust was apparent.



This Diebold safe door part was spotted with synthetic perspiration, covered with fingerprint neutralizer, then wrapped with Marvellum VPI. At the end of the test there was no indication of rust. The part was in the same excellent condition as the day it was made.

with MARVELLUM vpi WRAP

No wonder, after the tests shown above, Diebold Inc. chose Marvellum VPI® Wrap to protect their safes from rust. All ferrous metal parts are now kept wrapped from the moment they are made and each safe . . . large or small . . . is protected by Marvellum VPI before and during shipment. A special coating on the VPI paper vaporizes . . . forms an invisible protective film that positively prevents rust.

Marvellum VPI is easy to use . . . just fold the paper over the part. No need for time-consuming slushing or greasing. No mess or costly cleaning when the item is unwrapped. It's bright and clean, ready for immediate use.

You'll find many uses for Marvellum VPI in your plant . . . wrap steel parts, protect inventories, line tote boxes.

Marvellum VPI is available in rolls of 20, 30, 40 and 60 lb. paper stock and *can be individually imprinted with your trademark* on quantity orders. Envelopes, sheets, bags, shrouds and tubes are also available.

Marvellum VPI Wrap is made in compliance with Military Packaging Specification MIL-P-3420.

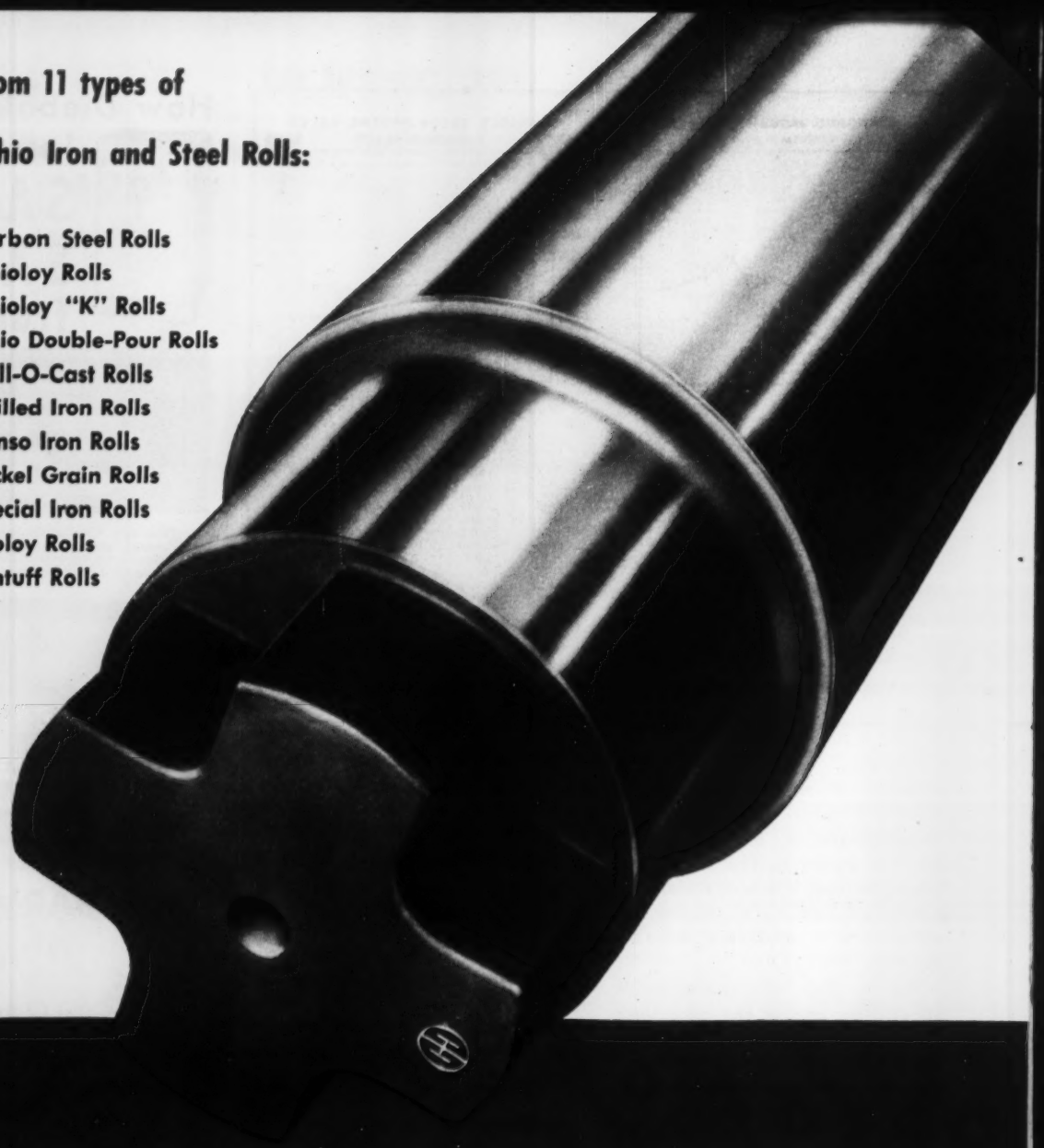
FREE BOOKLET
Gives you all the facts.
Send for your copy today.

The Marvellum Company
1 Appleton Street Holyoke, Mass.

Choose from 11 types of

Ohio Iron and Steel Rolls:

- Carbon Steel Rolls
- Ohioloy Rolls
- Ohioloy "K" Rolls
- Ohio Double-Pour Rolls
- Holl-O-Cast Rolls
- Chilled Iron Rolls
- Denso Iron Rolls
- Nickel Grain Rolls
- Special Iron Rolls
- Nioloy Rolls
- Flintuff Rolls



Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY

THE OHIO STEEL FOUNDRY CO.

RALPH F. HORNBACH
. . . new post at Geo. D. Roper Corp.

WALTER E. SUTTER
. . . sales mgr. for GE's electronics

JOHN M. DOLAN
. . . Solar Aircraft v. p.-sales

Geo. D. Roper Corp., Rockford, Ill., named **Ralph F. Hornbach** general manager of its newly created special products division. Director of purchasing for the last four years, he is succeeded by **Wallace Hollingsworth**, former purchasing agent.

Frank A. Ryan was named general manager, contractual engineering department, **United Aircraft Products Inc.**, Dayton, O. He was manager of the eastern district.

Earl J. Clark was appointed general sales manager, **Set Screw & Mfg. Co.**, Bartlett, Ill. He succeeds **Russel Livington**, resigned.

F. L. Riggin Sr., president of Mueller Brass Co., was elected president of **Sheet Aluminum Corp.**, Jackson, Mich., recently acquired by Mueller as a subsidiary. Other executive changes include: **F. L. Riggin Jr., R. M. Tree** and **W. R. Walsh**, vice presidents; **H. D. McKinnon**, vice president and general manager; and **W. M. Edmondson**, secretary-treasurer. **W. Ray Adams** and **Tyler Riggin** were named to the board of directors.

John P. Richmond, former comptroller, was elected vice president-finance of **ACF Industries Inc.**, New York. **Paul M. Anderson** was made assistant vice president and **Walter J. Conaty** comptroller.

Walter E. Sutter was made manager of sales for instruments and industrial electronic products of **General Electric Co.'s** commercial equipment department at Syracuse, N. Y.

Executive changes at **Laclede-Christy Co.**, St. Louis, include: **W. L. Fabianic**, vice president in charge of research and quality control; **P. K. Nichols**, vice president in charge of operations; **E. J. Williams**, controller-treasurer; **J. H. Schoemaker**, secretary. **W. W. Shipley** has resigned as vice president and treasurer.

Christopher T. Kastner and **J. Benning Monk** were appointed sales managers in the power transformer department of **General Electric Co.** Mr. Kastner is at the medium transformer plant at Rome, Ga. Mr. Monk replaces Mr. Kastner as manager of transformer apparatus sales at Pittsfield, Mass.

John W. Angstadt was appointed works manager of Blaw-Knox Co.'s **Bufalovak Equipment Division**, Buffalo. **W. D. Kohlins** was named to the new position of director of engineering.

Heinz Pagels was made general manager of **Virginia Metal Products'** manufacturing division. He has headquarters at its Orange, Va., factory.

John M. Dolan was named to the newly created post of vice president-sales at **Solar Aircraft Co.**, San Diego, Calif. Assuming his new duties Oct. 1, he will be in charge of military and commercial sales of Solar products in the San Diego and Des Moines, Iowa, plants. Mr. Dolan, since 1949, has served as vice president, general sales manager and director of Hydraulic Press Mfg. Co.

Stuart Edgerly was made manager of the newly formed industrial sales division of **Fenwal Inc.**, Ashland, Mass. He formerly served Fairchild Camera & Instrument Corp. as assistant to the vice president-sales and later as sales manager, potentiometer division.

At **Cold Metal Products Co. of California**, Los Angeles, **Phillip W. Messer**, formerly with Chase Steel & Supply Co., becomes product manager, stainless division. **L. W. Renk** was made manager of the order department, and **William E. Brady** becomes assistant sales manager.

Charles W. Bowden Jr. succeeds **D. M. Considine**, resigned, as market extension manager of the industrial division of **Minneapolis-Honeywell Regulator Co.**

Kaiser Aluminum & Chemical Sales Inc., Oakland, Calif., appointed **J. P. Moran** building wire

NORMAN BIRCH

I. EUGENE COX

. . . new vice presidents at National Bearing Div.

specialist in charge of its national sales program for aluminum building wire.

National Bearing Division, American Brake Shoe Co., appointed **Norman Birch** vice president in charge of operations, **I. Eugene Cox** vice president in charge of engineering and development and **Bernard Esarey** works manager of its Meadville, Pa., plant. Mr. Birch and Mr. Cox will be located at division headquarters in St. Louis. Mr. Esarey continues as chief engineer of the division in addition to his new assignment.

Dale W. Brothers was elected vice president of **Fordees Corp.**, Leetonia, O.

Aeroquip Corp., Jackson, Mich., appointed **Forrest F. Hinkley** general manager of its subsidiary, **Aero-Coupling Corp.**, Burbank, Calif., responsible for sales and manufacturing functions.

Joseph L. Nelson is design manager, specialty products division, **Edwin L. Wiegand Co.**, Pittsburgh. His previous position was manager of product styling at Magic Chef Inc.

Fred K. Landgraf was made pig iron sales representative for **Republic Steel Corp.** in the Chicago district.

Philip J. Wanzek was made manager of the Milwaukee branch sales office of **General Cable Corp.** He succeeds **George S. Ricker**, transferred to managership of the Chicago branch sales office.

Joseph P. Costigan was made works manager of **American Machine & Foundry Co.'s** Buffalo plant. He formerly served as operations manager of Alloy Rods Co.

At **Timken Roller Bearing Co.** **Robert W. Ertle** was made superintendent of production at the Canton, O., bearing factory, and **Kenneth R. Adair** was promoted to superintendent of maintenance at the Canton and Gambrinus, O., bearing factories. **Robert L. Sisson** will be assistant superintendent at Gambrinus, where **Donald W. Skelley** was made general foreman of department 64.

At **General Electric Co.'s** locomotive and car equipment department at Erie, Pa., **Donald G. Carr** was made manager, railroad regional parts center, and **James H. Williams**, manager of parts sales. **K. O. Anderson** is locomotive rebuild specialist and sales engineer.

Robert H. Wilkie was made eastern regional sales manager, **New Departure Division**, General Motors Corp., Bristol, Conn.

E. C. Graves, superintendent of fabricating, **Carboloy Department**, General Electric Co., Detroit, was named superintendent of product manufacturing.

Glenn W. Thompson, president, **Arvin Industries Inc.**, Columbus, Ind., also was elected chaiman. In this post he succeeds the late **Q. G. Noblitt.**

William J. Kennedy was appointed chief engineer of the machinery and lens divisions of **Shuron Optical Co.**, Rochester, N. Y.

James P. Cooper was made general superintendent in charge of manufacturing at **General Railway Signal Co.'s** plants in Rochester, N. Y.

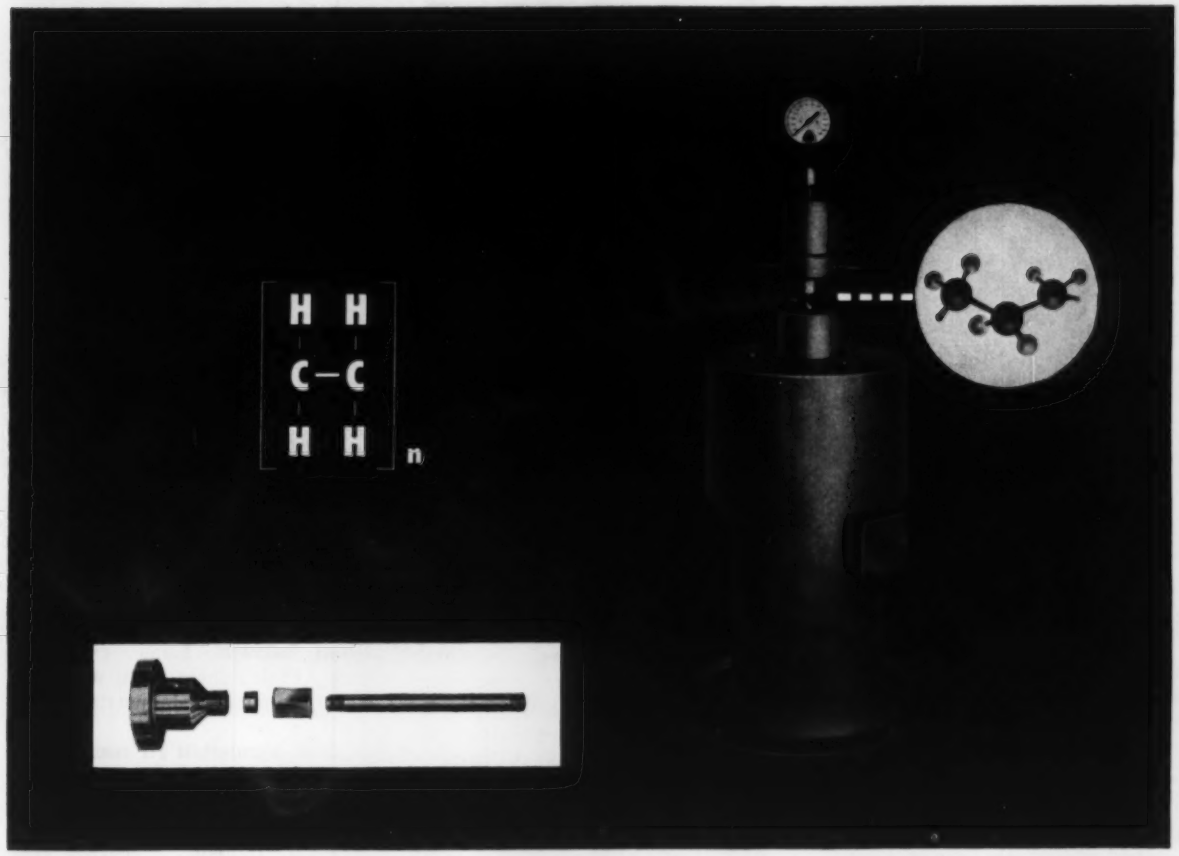
Joy Mfg. Co., Pittsburgh, elected **John D. Russell** vice president-engineering.

G. R. Cuthbertson was made pro-

ROBERT W. ERTLE

KENNETH R. ADAIR

. . . promotions at Timken Roller Bearing Co.



TUBING BY SUPERIOR SAVES 33%
on production cost of Autoclave covers!

Shown here is the Magne Dash* autoclave, a "dash pot" used to test physical and chemical properties of materials under high pressures.

The Magne Dash cover now costs far less to make than it used to. For in redesigning it, Autoclave Engineers, Inc., Erie, Pa. found that Superior cold drawn Type 316 stainless steel tubular component gave them amazing economies. Savings 33%.

Originally, 2" stainless steel forgings were used in the Magne Dash cover. These had to be machined and deep drilled—time-and-money consuming operations. Superior tubing eliminated this expensive work and reduced scrap loss almost to zero! At the same time, minimum yield strength was raised from about 40,000 psi to 100,000 psi. And Autoclave Engineers found Superior tubing easy to thread, easy to clean and unusually resistant to corrosive catalysts used in testing.

If you have a problem in high pressure processing—or any other problem that involves tubing—call on Superior. We make a specialty of fine tubing—in special shapes and sizes—and in more than 55 analyses! Out of our long experience, you are sure to get the answers you want. Tell us about your current production problem. Send for our free Catalog Section 20 on stainless steel tubing. Superior Tube Company, 2005 Germantown Ave., Norristown, Pennsylvania.

*Licensed by Standard Oil Company (Indiana) U.S. Patents 2631091 and 2661938

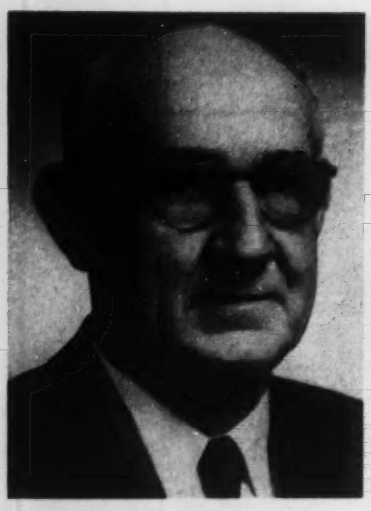
Round and shaped tubing available in Carbon, Alloy and Stainless Steels; Nickel and Nickel Alloys; Beryllium Copper; Titanium; Zirconium

Superior Tube

The big name in small tubing

All analyses .010" to ⅜" O.D.
Certain analyses in light walls up to 2½" O.D.

West Coast: Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif. • RAymond 3-1331



H. B. PLUNKETT
. . . Green Fire Brick exec. v. p.

J. P. COUGHLIN
. . . joins Eutectic Welding Alloys

ANDREW LISTON
. . . Eddystone Div. gen. sales mgr.

duction manager, tire division, **United States Rubber Co.** He has headquarters in New York.

H. B. Plunkett was elected executive vice president of **A. P. Green Fire Brick Co.**, Mexico, Mo. With varied experience in all phases of the company's operations, he has served in recent years as vice president and manager of domestic and Canadian affiliate companies.

Ellis L. Spray was elected executive vice president, **W. L. Maxson Corp.**, New York. A former vice president of Westinghouse Electric Corp., Mr. Spray joined Maxson in 1951.

William L. Nehrenz was made director of sales for **Reynolds Industries Inc.**, Santa Monica, Calif.

J. P. Coughlin assumes duties early in October with **Eutectic Welding Alloys Corp.**, Flushing, N. Y., which he joins as assistant to the president. He was formerly manager of the arc welding division of Westinghouse Electric Co. in Buffalo.

John P. Howland fills the newly created post of executive vice president of **Landers Corp.**, Toledo, O. **James L. Davison** was made general sales manager.

National Screw & Mfg. Co., Cleveland, assigned **F. W. Lawrence** as special sales representative in development work with customers. Mr. Lawrence joins National after several years with Ohio Nut & Bolt Co. where he was sales manager.

Andrew Liston was made general sales manager, **Eddystone Division**, Baldwin - Lima - Hamilton Corp., Philadelphia. He was formerly manager of industrial sales.

O. DeG. Vanderbilt III resigned as president of **Taylor-Wharton Iron & Steel Co.**, Cincinnati. **O. DeG. Vanderbilt Jr.** continues as chairman. **R. D. Hill**, executive vice president, will be chief executive officer with headquarters in High Bridge, N. J. **Ralph G. Detmer**, vice president, is in charge of the trackwork division in Cincinnati. Mr. Vanderbilt will devote full time to Twisco Corp., Cincinnati holding company, whose assets consist of proceeds of the sale of Taylor-Wharton last year to Harrisburg Steel Corp.

OBITUARIES . . .

Robert J. Minshall, 56, who retired Aug. 15 as president of **Pesco Products Division**, Borg-Warner Corp., Cleveland, died Sept. 7.

Joseph E. Terrill, 44, district sales manager at St. Louis for **Reliance Steel Division**, Detroit Steel Corp., died Sept. 4.

John H. Hilton, 50, assistant production manager for **Bliss & Laughlin Steel Corp.**, Buffalo, died Sept. 4.

George D. Gilbert, 58, former general manager, **Baldwin-Duckworth Division**, Chain Belt Co., in Springfield, Mass., died Sept. 5.

Robert Rullman, 70, midwest district manager of **Patterson Foundry & Machine Co.**, died in Chicago Sept. 8.

Roy Virgus, 61, owner, **Virgus Machine & Tool Co.**, Dayton, O., died Aug. 31.

Robert Pollock, 45, New York district sales manager, wire rope division, **American Chain & Cable Co.**, New York, died Sept. 8.

W. Porter Golden, 64, assistant to the general manager of sales, **Spang-Chalfant Division**, National Supply Co., Pittsburgh, died Aug. 31.

John N. Thornton, founder of **Thornton Laboratories**, New Britain, Conn., died Sept. 2. He had been in semi-retirement for the last few years.

Harvey H. Dwight, 40, president, **Aircraft Engine & Parts Co.**, New York, and chairman of the board of Lear International Inc., died Sept. 5.

Marvin W. Lewis, 86, who founded **Lewis Machine Co.**, Cleveland, in 1913, and actively directed it until a few years ago, died Sept. 7.

Joseph A. Voss, 62, for many years director of industrial relations for **Republic Steel Corp.**, Cleveland, died Sept. 9. He retired five years ago.

'round the clock with
I-WICKWIRE WIRE

In this advertisement we continue to take you through a typical day in the life of John Q. Citizen . . . showing you the part CF&I-Wickwire Wire plays in his everyday activities. Our last advertisement took us through John's bedroom, the nursery and the kitchen.

garage—8:30 a. m. A lucky fellow, John rides to work every day in his car. This is his garage. Notice that it has a smooth-operating overhead door. What makes it swing up? A large spring. And—you guessed it—it's made from CF&I-Wickwire Wire.

automobile — 8:35 a. m. CF&I-Wickwire Wire contributes much to the comfort and efficiency John gets from his car. There's wire in the springs of the seat and back cushions. Under the hood in the valve springs and the starter spring—to mention just a few of the places where wire is used.

highway—8:45 a. m. Notice the ribbon of concrete over which John's car rides smoothly to its destination. Many people, just like John, fail to realize that what holds it together is Welded Wire Reinforcement Fabric—another of the products that use CF&I-Wickwire Wire.

Watch for the balance of John's day in succeeding advertisements that take him to his office, through his plant and finally home to the relaxation of his living room.

FOR THE WIRE YOU REQUIRE - CHECK CF&I-WICKWIRE

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION CF&I

WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston
Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • Seattle • Spokane • Wichita

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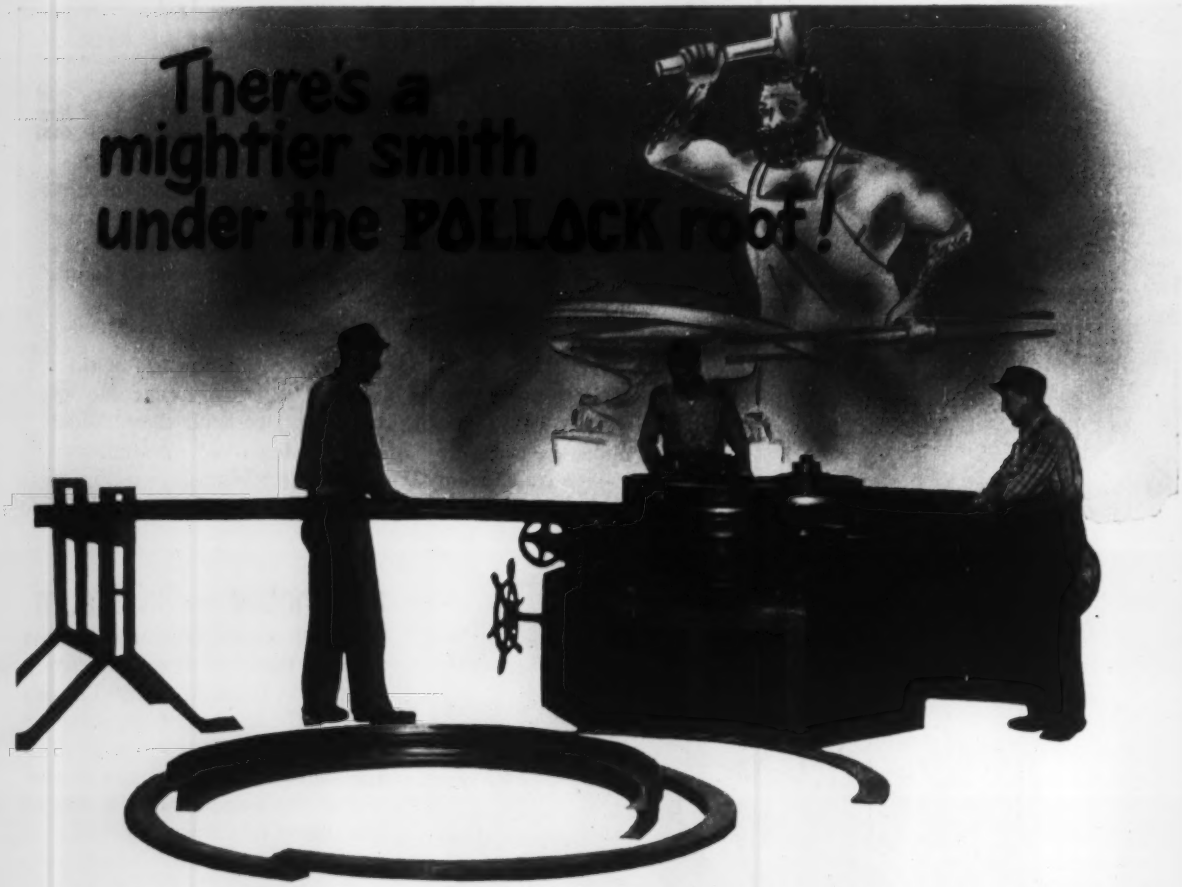


A mighty man was he . . . but even Longfellow's smithy couldn't forge the many tons of angles used in the construction of a modern blast furnace. At The William B. Pollock Company that job is done by the angle bending rolls you see above.

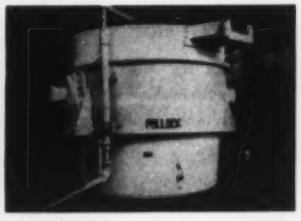
These rolls bend angles from 2" x 2" to 5" x 5", and bars from 1" x 3" to 2" x 4" on edge, and from 1" x 3" to 1¼" x 4" flat bending, quickly, accurately and economically.

Bent angles and bars are used in blast furnace construction as flanges for gas mains and miscellaneous piping, and as supports for brick, rings and shelves. Also as shield stiffeners on hot metal and cinder cars, brick retaining members on ladle tops, etc.

These bending rolls are another example of how The William B. Pollock Company develops and maintains the special modern facilities required to meet the demands of iron and steel manufacturers throughout the world . . . facilities that speed production and reduce over all costs on big jobs.

Pollock-built Blast Furnaces

Pollock-built Hot Metal Ladle Cars



Pollock-built Open Hearth Ladles

THE WILLIAM B. POLLOCK COMPANY

YOUNGSTOWN, OHIO

STEEL PLATE CONSTRUCTION • ENGINEERS • FABRICATORS • ERECTORS

BLAST FURNACES • HOT METAL CARS AND LADLES • CINDER AND SLAG CARS • INGOT MOULD CARS • CHARGING BOX CARS • WELDED OPEN HEARTH LADLES

Stamping Plant Opens

Walton Hills, O., facility will ship to Ford's nationwide network of assembly plants

STAMPINGS are flowing from Ford Motor Co.'s new plant in Walton Hills, O.

The hood line (one of 22 planned) was the first to get under way at the mammoth installation 14 miles southeast of downtown Cleveland. Stampings for Ford, Mercury and Lincoln passenger cars will be shipped to the company's nationwide network of assembly plants.

Ground was broken for the plant Sept. 15, 1953, and the original section is 80 per cent completed. Original construction plans called for 960,000 sq ft of manufacturing floor space. Recently, a 320,000-sq-ft addition was announced (STEEL, Aug. 2, p. 77). C. R. McCormick is plant manager.

Dearborn Project—In another expansion move, the company has started construction of an addition to its dynamometer building at its Research & Engineering Center, Dearborn, Mich. The new wing will cover 46,400 sq ft and will have 30 engine test cells.

Upon completion in 1956, the entire dynamometer test facility will cover an area of about 294,000 sq ft and will include 67 test rooms. Its principal section was erected in 1952 as the first major unit of the huge center.

Since 1952, four other units to house Ford's engineering staff activities have been erected in the Research & Engineering Center—the styling building, pilot gas turbine laboratory, maintenance building and vehicles testing building "A." Work also is under way on an engineering staff industrial relations building scheduled for completion this month. Ground will be broken this fall for a body engineering building, scientific laboratory and a research building, which also will house a cafeteria.

Stevens Enlarges Facilities

Frederick B. Stevens Inc., Detroit, metal-finishing and foundry equipment manufacturer, recently completed an addition to its Springfield, O., plant. The new facilities enable the firm to increase production of metal processing and automatic rock and barrel plating equipment. Production of dryers and metal-finishing waste-disposal equipment also will be speeded up.

Eltex Chemical Acquires Rights

All rights to the Jetal process (blackening ferrous metals by oxidation) have been acquired by Eltex Chemical Corp., Providence, R. I. Mark Weisberg is president of the recently formed company.

Inland To Enter New Field

Inland Steel Co., Chicago, is preparing to make wide flange beams, a new field for the company that has produced other structural shapes for many years.

Rolling capacity for 325,000 tons annually (wide flange steel beams in sizes ranging from 8 in. to 24 in.) is being installed at the Indiana Harbor (Ind.) Works. Mesta Machine Co., Pittsburgh, has the contract covering design and manufacture of the rolling mill. Contract includes alterations and improvements to existing equipment, plus a new reversing universal and edging mill stand, a universal finishing mill stand and tables, gag press, straightener, saws, transfers and finishing equipment.

Plans $34-Million Plant

Pittsburgh Plate Glass Co., Pittsburgh, will construct a $34-million plate glass producing plant at Cumberland, Md.

Chain Belt Opens Branches

Chain Belt Co., Milwaukee, opened district sales offices at 501 E. Morehead St., Charlotte, N. C.; 1720 Section Rd., Cincinnati; and in Moline, Ill. Sales to be handled by the offices include chain, sprockets, bulk material handling equipment, bearings and sanitation equipment.

Saco-Lowell Diversifying

Textile machinery manufacturers in New England are diversifying product lines, often going into new fields. The movement is attributed to the uneven production schedule of the industry. Saco-Lowell Shops, Boston, is going to

(*Please turn to page* 100)

Protective Handling Designed Into Eaton Pallet

Axle Division, Eaton Mfg. Co., Cleveland, designed a special pallet to hold matching pinions and gears, while providing complete safeguards against scratching and nicking. The pallets, measuring 40 x 40 in., hold six sets; the total load weighs 600 lb. Slots on the pallet are so arranged that matching units line up next to each other, thereby providing absolute protection. Wooden supporting members of the pallets rest across top of the gears during stacking

We Built a Reputation...

PRATT & WHITNEY KELLER MACHINES

With a work area of 36" x 20", the Type BL Keller is ideal for a wide variety of smaller jobs. Both single and 3-spindle models are manufactured. Other Keller Machines accommodate practically any required work size up to 20 feet horizontally by 7 feet vertically.

"KELLERING" *means...*

Throughout industry, use of the P&W KELLER MACHINE to produce complex 2- and 3-dimensional forms by tracer-controlled milling has become so popular and so widespread that this type of machining is universally known as "Kellering."

Yes, we at Pratt & Whitney are proud of this recognition and reputation. But we also know that reputation and past performance ***alone*** aren't enough to insure ***your*** continued profitable operation in the face of increasingly competitive markets and constantly rising production costs.

For this reason, we have carried on a program of continuous research, development and improvement. As a result, P&W Keller Machines — always outstanding performers — now offer the increased speeds, feeds and inbuilt efficiency to meet today's demands for still greater productivity. In many applications, actual on-the-job performance has proved that Keller Machines are ***now more than twice as fast*** as older machines or older methods.

- **FAST, ECONOMICAL REPRODUCTION OF COMPLEX SHAPES** . . . that cannot be machined economically by any other means.

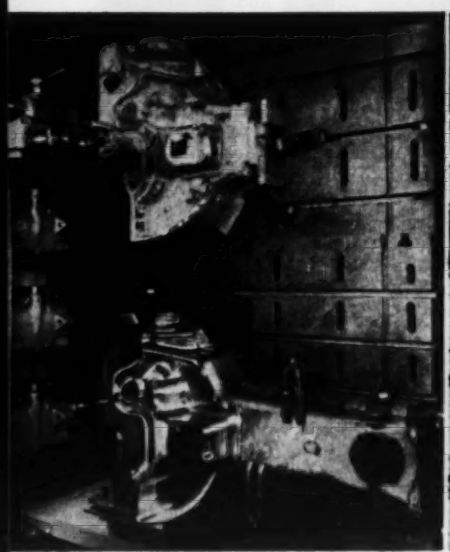
- **AN UNLIMITED VARIETY OF JOBS WITHOUT EXPENSIVE ATTACHMENTS** . . . because P&W Keller Machines are designed and built *specifically* for tracer-controlled milling, not just adapted.

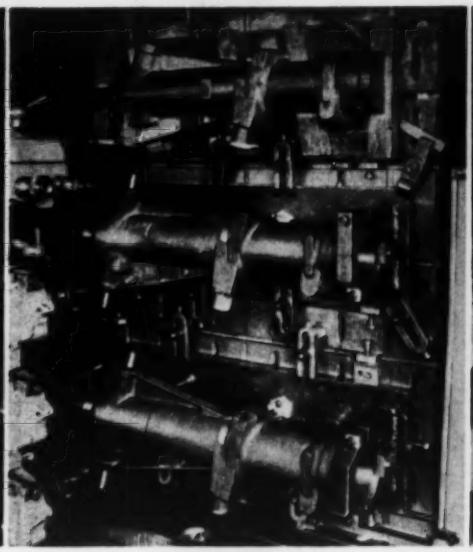
- **RUGGED DEPENDABILITY** . . . Kellers stay on the job year after year without frequent or expensive maintenance.

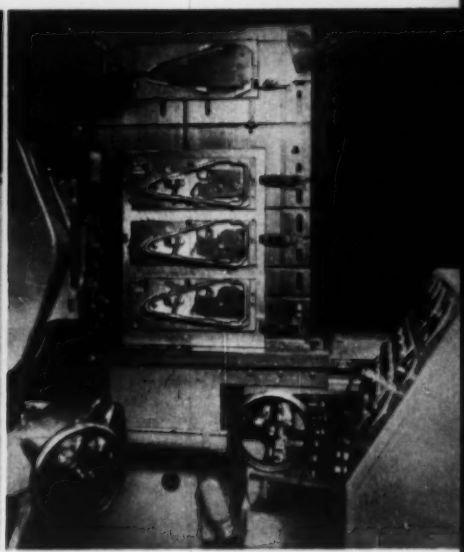
- **ELECTRIC TRACER CONTROL** . . . that is dependable, relatively simple, retains high initial accuracy without complicated adjustment. ***Profiling*** to a pre-set depth following an outline template . . . or ***3-dimensional milling*** following a full model.

but We're Not Resting on it!

ALL THESE JOBS . . . DONE QUICKER, BETTER







PHOTOGRAPHS COURTESY OF MPM INC., CLEVELAND, OHIO.

DIES, MOLDS AND METAL PATTERNS

The complex 3-dimensional shape of a plaster model is duplicated in a large brass casting to produce a pattern for a railroad coupling. Using only one of its 3 spindles, the Keller Machine easily accommodates this large workpiece.

PROTOTYPE AND PILOT PRODUCTION

Producing parts for aircraft landing gear, this P&W Keller Machine mills two steel forgings simultaneously. The exact shape of the mahogany model shown at the top is accurately duplicated with speed and economy.

PRODUCTION MILLING AND PROFILING

Precision profiling 3 aluminum alloy castings at a time, this P&W Keller 3-Spindle Machine economically makes production runs on aircraft ribs. The model, in this case, is an inexpensive, 2-dimensional steel template.

Maintaining Your Reputation

. . . and your profits demands constant progress and improvement with a well conceived program of replacement and modernization. Plan to include ***new*** P&W Keller Machines in your program . . . benefit by the added productivity they can bring to today's *and* tomorrow's jobs. Write to the P&W Branch Office nearest you . . . or direct to West Hartford . . . for your free copy of Circular No. 490-3 that fully describes the Type BL Keller Machine.

MODERNIZE with PRATT & WHITNEY REPLACE FOR PROFIT

PRATT & WHITNEY

DIVISION NILES-BEMENT-POND COMPANY

WEST HARTFORD 1, CONNECTICUT, U. S. A.

SINCE 1860

First Choice for *Accuracy*

MACHINE TOOLS • CUTTING TOOLS • GAGES

WHY WAIT MONTHS

FOR YOUR NEXT CRANE

For too many years, crane builders have made every order a "production". Weeks of extra engineering, custom built parts, and endless delivery delays have been standard fare for the buyer.

Fortunately, MICHIGAN CRANE is young enough not to have pet prejudices and experienced enough to produce excellent cranes at competitive prices and in a spectacularly short time.

For example, many plants have low clearances between the top of the crane runway and the lowest roof obstruction—which calls for a "low headroom" crane. Most manufacturers call in a troop of engineers for the job. But, because all Michigan cranes are designed for minimum headroom, chances are one of our standard models will fit—saving you weeks of waiting and considerable expense.

Give us a chance to prove it; write for Bulletin 154 to Michigan Crane & Conveyor Co., 114 N. McKinstry Avenue, Detroit 9, Michigan.

MICHIGAN

Crane & Conveyor Company

(*Concluded from page* 97)

manufacture an automotive kit. Several machinery makers will reveal plans later this year.

A-P Controls Buys Valvemaker

A-P Controls Corp., Milwaukee, purchased Milwaukee Valve Co. A complete line of brass and aluminum valves for gasoline, oil, chemical, heating and aviation industries is made.

New Firm Opens Stamping Plant

Melray Mfg. Co. began operations at 9240 Chestnut Ave., Frankln Park, Ill. It specializes in the fabrication of die-cut stampings to close tolerances and exact duplication in small quantities (from 5 to 10 pieces to thousands).

McLouth Unveils Ore Bridge

McLouth Steel Corp., Detroit, put into full-scale operation a new 547-ft-long ore bridge at Trenton, Mich. It will carry 2.3 million lb of ore from ship to shore in one hour. A second bridge will be installed in several weeks. Both were built by Dravo Corp., Pittsburgh. The 60 pieces of electrical equipment that run the 1350-ton unloader were manufactured by Westinghouse Electric Corp., Pittsburgh. Just one bite of the dipper will "gobble up" 27,000 lb of ore. The bucket will hoist at 300 fpm and then move along by trolley—a total weight of 205,000 lb. In 41 seconds, the ore bridge can run a complete cycle from digging the ore to dumping it and returning for another stab at the cargo.

Firm Enters Nuclear Field

Gordon Dean, former chairman of United States Atomic Energy Commission, Washington, organized Nuclear Science & Engineering Corp., Pittsburgh. American Metal Co. Ltd., Ketay Mfg. Corp. and Lehman Bros., investment bankers, all of New York, participated in the creation of the new enterprise. The firm will provide a variety of technical services to firms engaged in nuclear power development and industries interested in the application of radio-

FLEXIBLE BUSDROP CABLE

POWERDUCT eliminates expensive rewiring when equipment must be moved.

This cable makes machinery mobile

PLUG IN POWERDUCT at busduct and machine. See how spring keeps cable taut. There is no costly rigid conduit to rip out.

You may not be utilizing the full flexibility of your busduct system . . . if you aren't matching it with equally flexible, UL-approved ANACONDA Powerduct Cable.

This busdrop cable permits you to quickly relocate machinery. There is none of the expense and bother of ripping out permanent or semi-permanent wiring.

Powerduct is the only nonmetallic-armored busdrop cable approved by Underwriters' Laboratories, Inc. for busway branches under section 3646, 1951 National Electric Code. Always ask for it at your regular supplier. *Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.* 53319

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TODAY'S HEADQUARTERS FOR INDUSTRIAL WIRING

Building wire and cable • power and busdrop cables • control and communication wire and cable • distribution cables • magnet wire • wire and cable accessories

NICKELOID METALS

look good from any angle

Whether you're angling for a new product design, re-designing an established product, or casting for fresh design ideas for a functional part or decorative trim . . . take a good look at Nickeloid pre-plated Metals. Reflected in their gleaming, durable finishes of chrome, nickel, copper and brass you will find a whole new realm of exciting design possibilities. You will find, too, many design success stories which resulted when Nickeloid Metals were considered in the *pre*-design stage, to take *full* advantage of their versatility and their lower production cost.

NICKELOID METALS

activity to industrial products and processes. Chairman of the new corporation is Mr. Dean; president, Ronald A. Brightsen; vice president and technical director, Dr. Ralph L. Ely; secretary-treasurer, Richard S. Frankel.

Norton To Enlarge Branch

Norton Co., Worcester, Mass., will erect a $110,000 addition to its Pittsburgh district office and warehouse. The firm produces grinding wheels.

Transformer Output To Jump

Canadian General Electric Co. Ltd.'s transformer plant in Guelph, Ont., was officially opened Sept. 17. The $12-million facility will increase the company's power transformer manufacturing capacity 50 per cent.

Buys Steel Equipment Line

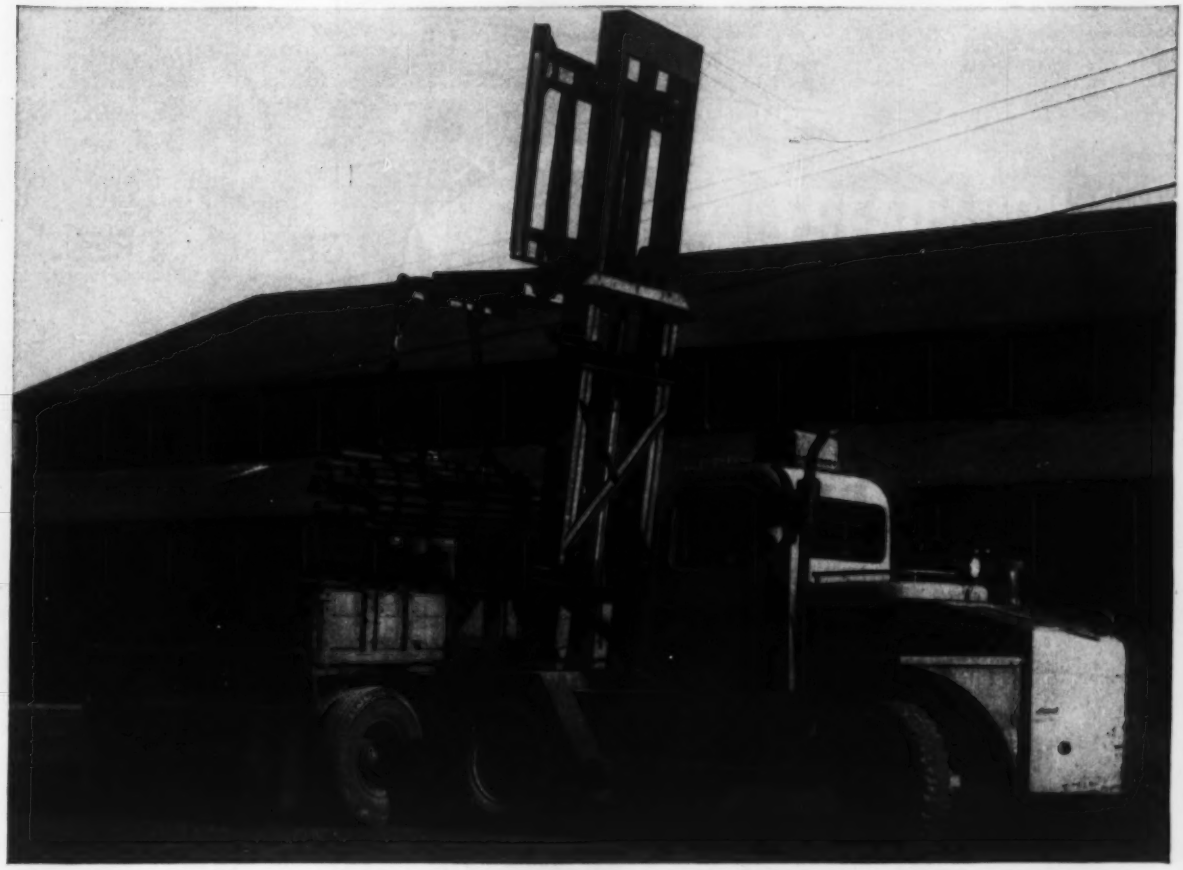
Steel Service Mfg. Co., Steubenville, O., purchased the steel equipment line formerly manufactured by Advance Metal Products Corp., Chicago.

Thompson To Build Laboratory

Thompson Products Inc., Cleveland, was awarded a $1,039,500 contract for construction of a jet engine test laboratory to be operated for the Navy. The laboratory, providing testing facilities for aircraft parts made by Thompson, will be located on a 94-acre lakefront site near Painesville, O., about 20 miles east of the firm's Euclid plant. The unit will be designed for testing jet components. The company has no intention of developing jet engines of its own. "We are parts makers, and we intend to continue in that role," says A. T. Colwell, vice president.

Karp Widens West Coast Outlet

Karp Metal Products Co., Brooklyn, N. Y., announces formal affiliation with the West Coast Division of H & B American Machine Co. Inc., Culver City, Calif. The 20,000-sq-ft Culver City plant will be used to manufacture sheet metal products for West Coast customers of Karp Metal. This com-



Announcing the Clark-Ross Y-200

Designed specifically for 20,000 lb. jobs!

See the Y-200 at the Iron & Steel Exposition

CHECK THESE FEATURES:

Heaviest uprights in the industry: Hi-tensile steel channel specially rolled for this truck.

Shortest turning radius: 15 feet; shorter than any other comparable truck.

3 in. thick steel steer axle.

10 in. underclearance at uprights, plus excellent weight distribution, permit operations under most severe yard conditions.

Safety check-valve built-in: a Clark-Ross exclusive; impossible to drop the load because of line failure.

Planetary gear drive: takes the strain off the axle; all drive components protected.

Extremely easy to service: hydraulic cylinder serviced from bottom, no need to remove uprights; engine and hydraulic system easily accessible.

From the ground up, the Y-200 is a genuine 20,000 lb. truck—not merely a beefed-up truck of less capacity. Pre-production models have been job-tested for nearly a year at steel mills, sawmills and wood treating yard.* These trucks have proved their ability to cut handling costs under the toughest conditions. We are frank to say that we believe the Y-200 will give you better performance, at less cost, than any comparable machine. We invite your comparison: Simply call your local Clark dealer, listed under "Trucks Industrial." Or write us direct. There's no obligation.

*Names supplied on request.

CLARK EQUIPMENT

ROSS CARRIER LINE
Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 26, Michigan
☐ Send details on Y-200

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

(Advertisement)

Chemsteel CASEBOOK

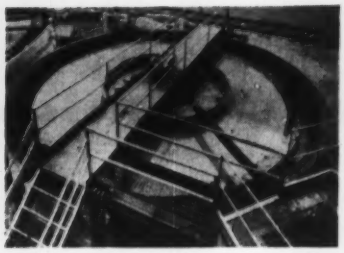
ACID-ALKALI-PROOF CONSTRUCTION
CHEM STEEL
CONSTRUCTION COMPANY, INC.

Acid-Alkali-Proof Construction News of Interest to Metal Working Men

CHEMSTEEL PROTECTS U.S. STEEL

Continuous Pickling Line and Acid-Proof Flooring

Waste Pickling Solution Tank



Flash Mixer

Acid doesn't stand a chance at U. S. Steel's new Fairless Works. The 80″ Continuous Pickling Line, the Flash Mixer, the Waste Acid Holding Tanks and other equipment subject to acid attack have been completely protected from such attack by Chemsteel Construction Company, Inc.

Chemsteel crews, working with J. M. Foster Co., Inc., installed acid brick sheathing over rubberlined steel of the pickle line; lined two 50′ diam. by 16′6″ deep Pickle Liquor Storage Tanks with 4″ acid brick for Dravo Corp.; and installed 4″ acid brick sheathing over glass cloth reinforced asphalt membrane—also for Dravo—to protect the Flash Mixer.

The 80″ Continuous Pickle Line consists of a four-section acid tank, 336′ by 10′2″ by 6′1″ deep (I.S.), lined with 12″ acid brick; and a one-section wash tank, 37′ by 10′2″ by 4′ deep (I.S.), lined with 8″ acid brick. The Pickle Liquor Storage Tanks (weak acid) are both 50′ diameter and 16′6″ deep. The Flash Mixer is 22′8″ in diameter and 12′6″ deep.

Chemsteel also handled piers, trenches and sumps; almost 25,000 square feet of acid-proof flooring under the pickle line, in the electrolytic tinning line basement and in the acid tunnels; and other miscellaneous installations to protect various facilities in the Sheet and Tin division at U. S. Steel's Fairless Works.

Find out how you, too, can profit from Chemsteel specialized acid-alkali-proof construction services. Write for details today!

CHEMSTEEL CONSTRUCTION COMPANY, INC., 204 CHEMSTEEL BLDG., PITTSBURGH 32, PA.

Ford Transmissions Roll

Start of automatic transmission production at Ford Motor Co.'s former tank plant, Livonia, Mich., is marked by arrival of Merc-O-Matic units at end of assembly line (above). The plant uses "power and free" conveyors that enable assemblers to rotate the partially completed units to any position for precise placement of parts

pany is a leading maker of cabinets, boxes, chassis, housings, enclosures and racks for the electronics, mechanical and electrical industries.

Foundry Changes Hands

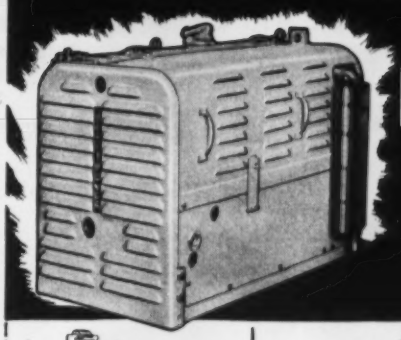
Vulcan Iron & Engineering Ltd., Winnipeg, Man., a subsidiary of Bridge & Tank Co. of Canada Ltd., Hamilton, Ont., acquired Manitoba Steel Foundries Ltd., Selkirk, Man. A. B. Hill, president of Bridge & Tank, says the entire foundry production will be concentrated in the future in the Selkirk plant.

Victor Equipment Expanding

Victor Equipment Co., San Francisco, is expanding its Alloy Rod & Metal Division. Construction has started in Whittier, Calif., on a 6000-sq-ft plant for the manufacture of hard-surfacing alloy rods. A furnace will be ready for installation when construction on the building is completed. Another 15,000-sq-ft building will be erected when initial construction is finished in October. No definite plans to move from its present

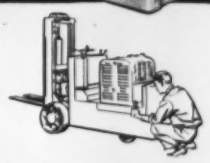
(*Please turn to page* 108)

The Most Flexible "Power Package" available for Industrial Trucks!



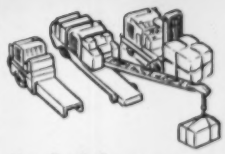
READY-POWER

Gas-Electric Drive



Ready-Power units can be installed in minutes

You can remove Ready-Power units in minutes



Use Ready-Power on any type of electric truck

Ready-Power units can be interchanged with batteries

"Tune up" a spare Ready-Power while trucks work

Ready-Power-equipped trucks know no time limitations

There are Ready-Power models for all truck sizes

Ready-Power is the originator of gas-electric drive for electric industrial trucks!

Get the Ready-Power Story!

Write for Bulletin 99

IF YOU DESIRE DETAILED SPECIFICATIONS STATE YOUR TRUCK SIZES

The READY-POWER Co., 3824 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

"Maintenance costs small, operators like LeBlonds..."

machine tool builder Greaves

Lineup of LeBlond Lathes at Greaves: 17" Rapid Production (foreground), seven 17" Regals and a 15" Regal. Turn precision parts for milling machines on 24 hour schedule. Dependable, versatile, accurate, cost little to maintain.

tells why he uses LeBlond lathes

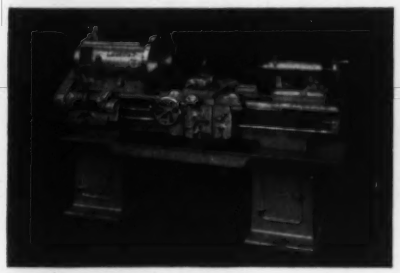
No one knows machine tools better than people who build them. And Greaves Machine Tool Company, Cincinnati, builder of milling machines, owns nine LeBlond Lathes! Eight Regals and a Rapid Production.

Since 1941, some of these lathes have worked almost 24 hours a day on full-schedule production for precision milling machine parts, woodworking machine parts and sub-contract work.

Bill Greaves himself says, "*Maintenance costs are extremely small, operators like working on their LeBlonds—because they're easy to operate, convenient, have a great deal of power for their size. Give long sustained accuracy, especially in boring and turning tapers*".

A machine tool man like Bill Greaves knows what he's looking for in a lathe. His opinion counts. When he says our lathes have what it takes, we feel it's a tribute of the highest order!

Check the variety of jobs these versatile lathes handle at Greaves. Sound like some of the parts production work in *your* shop? LeBlond Lathes can speed up jobs like these, keep your maintenance costs down to a bare minimum.



LeBlond REGAL Lathes

Light-duty lathes with heavy-duty features—ideal for production, job shop work and training. Geared headstock, quick change feed box, separate leadscrew and feed rod, taper key drive spindle nose, one-piece apron. Swings—13″, 15″, 17″, 19″, 21″, 24″, and 13″ bench model. 17″, 19″, 21″, 24″ Gap and 17″/28″ Sliding Bed Gap. Write for Bulletin R-G, stating sizes you are interested in.

Typical Jobs:

Bushings • Shafts • Armatures • Expansion arbors for mounting gears • Bevel gear blanks • Spindle for universal head • Sleeve gear blanks for Milling Machines • Tumbler for reverse drive • Formica gear blanks (laminated canvas-based gear material)

LeBlond RAPID PRODUCTION Lathes

Designed especially for low-cost high-production turning. Not a stripped-down engine lathe. Choice of headstocks gives you speeds within the range you choose. Swings—13″, 17″ and 20″. Write for Bulletin RP-G, stating sizes you are interested in.

THE R. K. LEBLOND MACHINE TOOL CO., CINCINNATI 8, OHIO

Your nearby LeBlond Distributor will give you all the facts. Call him soon, or write.

turned faster by

LeBLOND *of Cincinnati*

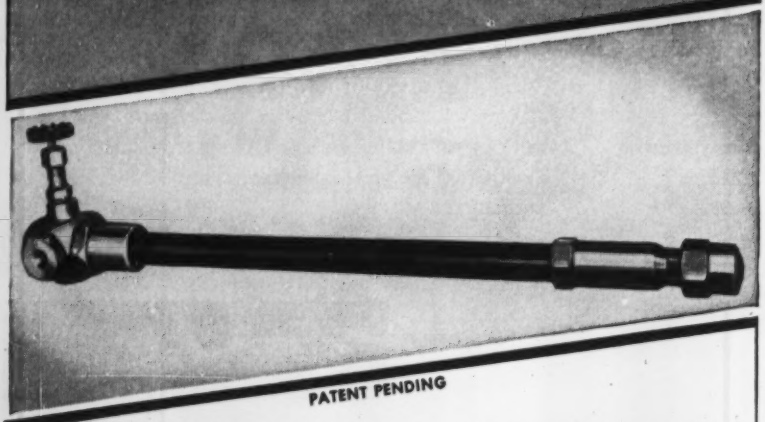
WORLD'S LARGEST BUILDER OF A COMPLETE LINE OF LATHES—FOR OVER 64 YEARS.

NATIONAL AIROIL

OIL BURNERS

of the steam and mechanical types now combined into

DUAL STAGE BURNERS



PATENT PENDING

Now, at last, the inherent advantages of *both* systems of fuel oil atomization are *profitably* yours . . . within the one, new NATIONAL AIROIL Dual Stage Burner.

42 years of combustion equipment design and manufacture are in back of the Dual Stage Oil Burner . . . and, it has been thoroughly tested and proved in the field for firing: Petroleum Processing Heaters; Rotary Kilns; H.R.T., Scotch Marine and Water Tube Boilers; etc.

Available in three sizes, the NATIONAL AIROIL Dual Stage Burner fires all grades of fuel from No. 2 to No. 6, with a ready capacity of 80 to 300 g.p.h. Further, for a perfect flame pattern, we would recommend using with the Dual Stage Burner either the NATIONAL AIROIL Universal Register for forced draft or, the NATIONAL AIROIL Tandem Unit for natural or induced draft furnaces.

Get detailed description, illustration, and specifications in NATIONAL AIROIL Bulletin 25.

OIL BURNERS and GAS BURNERS for industrial power, process and heating purposes
STEAM ATOMIZING OIL BURNERS
MOTOR-DRIVEN ROTARY OIL BURNERS
MECHANICAL PRESSURE ATOMIZING OIL BURNERS
AIR INTAKE DOORS
OBSERVATION PORTS
SPECIAL REFRACTORY SHAPES
LOW AIR PRESSURE OIL BURNERS
AUTOMATIC OIL BURNERS, for small process furnaces and heating plants
GAS BURNERS
COMBINATION GAS & OIL BURNERS
FUEL OIL HEATERS
FUEL OIL PUMPING and HEATING UNITS
FURNACE RELIEF DOORS

NATIONAL AIROIL BURNER CO., INC.

1392 EAST SEDGLEY AVE., PHILADELPHIA 34, PA.
Southwestern Division: 2512 South Boulevard, Houston 6, Texas

INDUSTRIAL OIL BURNERS, GAS BURNERS, FURNACE EQUIPMENT

(*Concluded from page* 105)

Lynwood, Calif., plant are contemplated, says Jack Spence, vice president in charge of the Alloy Rod & Metal Division.

Du Pont To Build Laboratory

E. I. du Pont de Nemours & Co., Wilmington, Del., plans to construct a $2,550,000 laboratory in which its electrochemicals and pigments departments will do fundamental research. Facilities for each department will be provided in separate wings. Du Pont's experimental station completed a $30-million expansion program about three years ago. This is the second additional lab to be scheduled for erection since that time.

ASSOCIATIONS

D. S. Harder, vice president-manufacturing, Ford Motor Co., Dearborn, Mich., received the first annual Presteel Award. It was presented by Worcester Pressed Steel Co., Worcester, Mass., which is sponsoring it in co-operation with **Pressed Metal Institute**, Cleveland (STEEL, Aug. 30, p. 59).

James C. Kelley was appointed general manager of **American Machine Tool Distributors' Association**, Philadelphia. He formerly was deputy director of the Metalworking Equipment Division, Department of Commerce, Washington.

NEW ADDRESSES

International Research & Development Corp., a subsidiary of **H. H. Robertson Co.**, Pittsburgh, moved into a plant on the northwest edge of Columbus, O. It was formerly occupied by Antenna Research Division of Thompson Products Inc. The firm makes portable electronic vibration analyzers and dynamic balancing equipment.

Gardner-Denver Co. moved into its new fabrication and warehouse building in Dallas. The company makes equipment for the oil, mining and construction industries.

McLouth
STAINLESS
Steel

High quality stainless sheet and strip steel . . . for the product you make today and the product you plan for tomorrow.

McLouth Steel Corporation
DETROIT, MICHIGAN
Manufacturers of Stainless and Carbon Steels

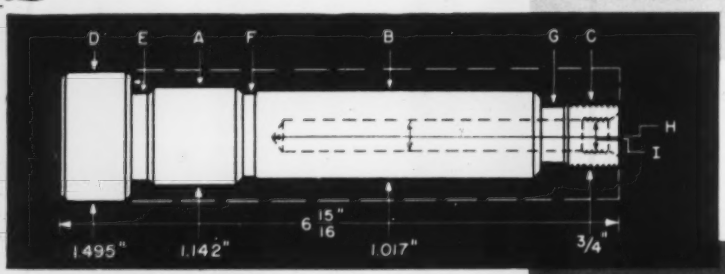
This is the difference High Velocity Turning makes

IN 1950 this job took...

7.60 min.

FLOOR TO FLOOR

Turn B 694 RPM — .005 Feed — Roller Turner
Turn C 694 RPM — .011 Feed — Square Turret
Turn A 694 RPM — .011 Feed — Square Turret
Turn D 694 RPM — .011 Feed — Square Turret
Form / Face } E.F.G. 694 RPM — Hand — Rear of cross slide
Chamfer — Square Turret
Drill H 694 RPM — .007 Feed
Tap I 1⅛" NPT
Thread C ¾-16" Diehead
Cut Off 340 RPM — .0035 Feed — H.S.S.



IN 1954 this same job takes...

5.70 min.

FLOOR TO FLOOR

R. Turn A — 1500 RPM — .015 feed — Roller Turner
Turn, A.B.C.D., Chamfer — 1500 RPM — .015 Feed — Tracer Attachment
Face, Neck, E, F, G, — 1500 RPM — Hand — Square Turret
Drill H 694 RPM — .007 Feed
Tap I 1⅛" NPT
Thread C ¾-16" Diehead
Cut Off — 1500 RPM — .0025 Feed

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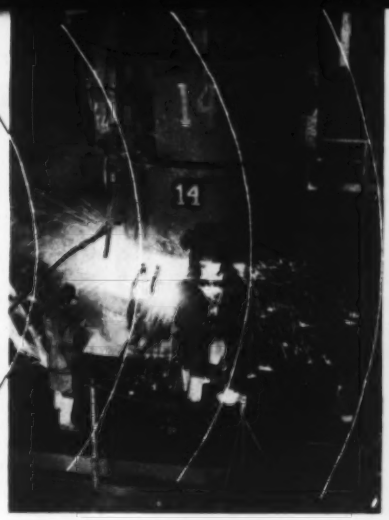

STEEL

1940
81 million tons

1946
91 million tons

1954
124 million tons

1965
145 million tons

Coming: Another wave of steel expansion

THIS is not a year in which you would expect steelmakers to be excited over plans for future expansion.

But they are.

Planning departments in major steel companies are busy. Studies of tomorrow's markets are going forward. Top staff conferences often face the problem: Dare we wait another six or twelve months before starting the engineering work for expansion?

Top steel executives queried by STEEL expect the new wave of steel expansion will become visible to the public in the early 1960s. The groundwork is being laid now.

How Much — Forecasting requirements for steel capacity is parlous business at best—and no one knows that better than steel management whose responsibility it is to spend the billions of dollars such a program involves.

This publication asked the heads of the major steel companies how much capacity they expected would be added by 1965. All agreed that substantial increases will have to be made to satisfy an anticipated upsurge in demand. Estimates varied but generally placed the capacity required in the 140-to-150-million-tons range, or a net increase of 15 to 25 million tons. A substantial amount of the capacity now listed as active is obsolete or inefficient. The latter tonnage, estimated at about 12 million by steel operating men, may be washed out over the next few years. Part certainly will be held as stand-by capacity.

If a median figure of 145 million tons is accepted as what the economy will require by 1965, the indicated new capacity to be brought in would be a whopping 30-plus million tons.

Largest factor in the coming steel expansion is the projected population growth. By 1965, we should have 180 to 190 million people.

Per capita consumption of steel last year was 1400 pounds. Assuming no increase in per capita consumption over the next decade, ingot production required for 180 million people would be 126 million tons. For 190 million, it would be 133 million tons.

Per capita steel consumption is on the increase. In 1940, it was only 1000 pounds. Market researchers in the steel industry are confident the per capita consumption will continue to increase.

Even if it doesn't, the actual requirements for 126 to 133 million ingot tons would require a larger capacity. Steelmen generally agree that a cushion of capacity over actual demand is needed—for emergencies and to provide consumers with adequate service.

Steel executives generally believe that all of today's 124 million tons will not be fully utilized for the next several years, possibly not until the late fifties. The huge postwar expansion, stimulated by defense demands and accelerated amortization, has caused some of the next decade's capacity to be built in the last decade.

C. M. White, Republic president, says: "It is our belief that the present steel capacity will be fully utilized by 1959 or 1960 and, with the amazing population growth, we anticipate additional facilities will be necessary in the early 1960s. The moves which we are making today anticipate our building additional capacity in that period."

Joseph L. Block, Inland president, says: "It seems reasonable to me to believe that there are several years ahead of us which will be taken up mainly by consolidating the present position of the industry

without any sizable growth in ingot capacity. However, I do believe that after this period is over, perhaps in the late fifties or early sixties, there will be another upsurge in ingot capacity, which might well bring the total capacity to 150 million tons by the year 1965.

"One might be so bold as to predict that a day will come within the next quarter century when 200 million Americans will each need a ton of ingots a year—a national requirement of 200 million tons."

E. G. Grace, Bethlehem chairman, believes we can no more than guess what steel capacity this country will need in 1965. One large controlling factor is the amount required for defense, and that naturally depends on the uncertain future course of world events.

He says: "The long-range trend in steel capacity is certain to remain upward, for the United States is still a growing nation with an increasing population, and facilities to serve that population must also continue to expand."

W. W. Sebald, Armco president, calculates: "The capacity of the steel industry in this country should approach 140 million tons by 1965. This estimate appears reasonable when tested by properly tempered relationships with population growth, total national output, etc. . . .

"I have confidence the steel industry will continue to look forward, as it has in the past, and build this additional capacity as needed to support, as well as enlarge, our economy and to protect and defend our country."

B. F. Fairless, U. S. Steel chairman, looking at the 45-million increase in population projected over the next 20 years, speculates: "If the per capita consumption of steel remains what it is today—and even if it does not rise, as it always has through this century—it will still take 14 plants the size of Fairless Works to meet the demands of those 45 million people. That means a new Fairless Works every 17 months for the next 20 years."

STEEL INDUSTRY *Statistics*

STEEL

Want to know size and shape of America's expanded steel capacity? Here is the first report in three years on finishing, ingot, pig iron and coke facilities in U. S. and Canada

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We've just completed a spectacular wave of steel expansion. Most people associate ingot capacity with steel expansion. But that is only a partial measurement. All steel ingot expansion in the country is impotent unless it is accompanied by expansion of finishing capacities of the right kind and in the right places.

The way finishing, ingot, pig iron and coke capacities line up today is revealed in the American Iron & Steel Institute's 1954 edition of its *Directory of Iron and Steel Works of the United States and Canada*. The current edition is the first published since 1951. Following tables from the directory summarize capacity figures for the industry by companies.

Finished Steel . . .

TOTAL HOT-ROLLED STEEL PRODUCTS

Products	Annual Capacity Net Tons
Rails—Standard, over 60 lbs. per yard	2,007,000
" —60 lbs. or less per yard	112,900
Long joint or splice bars and tie plate bars	812,510
Structural shapes—Heavy	5,565,270
" —Light	635,625
Steel piling—(Rolled)	249,400
Plates—Sheared	7,455,290
" —Universal	1,190,995
Hot rolled sheets	31,504,045
Coils for cold reduced black plate and tin plate	6,701,900
Hot rolled strip	5,177,560
Bars—Other than concrete reinforcement	14,176,150
" —Concrete reinforcement	1,958,480
Wire rods	7,001,375
Skelp	5,630,900
Blanks, tube rounds or pierced billets for seamless tubes	4,945,100
Wheels and axles—(Rolled)	456,700
Blooms and billets for forging	700,660
All other—Hot rolled	360,280
TOTAL	96,641,240
TOTAL STEEL INGOT CAPACITY	124,330,410
PERCENT TO INGOT CAPACITY	77.7%
Companies:	
Acme Steel Company	590,000
Allan Wood Steel Company	423,100
Allegheny Ludlum Steel Corporation	623,560
American Chain & Cable Company, Inc.	175,000
American Compressed Steel Corporation	12,000
American Locomotive Company	123,000
Ames & Company, Inc., W.	30,000
Armco Steel Corporation	2,220,000
Sheffield Steel Corporation	1,352,500
TOTAL	3,572,500
Atlantic Steel Company	237,000
Babcock & Wilcox Company	138,000
Baldwin-Lima-Hamilton Corporation	60,000
Barium Steel Corporation:	
Central Iron and Steel Company	288,000
Phoenix Iron & Steel Company	259,000
TOTAL	547,000
Berkman Company, Louis:	
Superior Sheet Steel Division	140,000
Parkersburg Steel Company	36,000
Ohio River Steel Division	136,080
TOTAL	312,080
Bethlehem Steel Corporation:	
Bethlehem Steel Company	13,840,000
Bethlehem Pacific Coast Steel Corporation	714,000
TOTAL	14,554,000
Borg-Warner Corporation	265,000
Braeburn Alloy Steel Corporation	3,300
Buffalo Bolt Company	65,600
Byers Company, A. M.	*40,000
Carpenter Steel Company	51,800
Colorado Fuel and Iron Corporation	1,481,000
Roebling's Sons Corporation, John A.	177,000
TOTAL	1,658,000
Columbia Tool Steel Company	1,800
Continental Steel Corporation	430,000
Copperweld Steel Company	478,500
Crucible Steel Company of America	703,095
Detroit Steel Corporation	1,100,000
Disston & Sons, Inc., Henry	38,600
Driver Company, Wilbur B.	6,000
Eastern Stainless Steel Corporation	36,000
Edgewater Steel Company	84,000
Empire Steel Company	270,000
Falls Hollow Staybolt Company	8,000
Firth Sterling, Inc.	16,600
Ford Motor Company	1,364,000
Granite City Steel Company	924,000
Green River Steel Corporation	241,920
Harrisburg Steel Corporation	125,000
Highland Iron & Steel, Inc.	41,000
Hooster Steel Corporation	15,000
Inland Steel Company	3,802,000
International Harvester Company	735,000
Jersey Shore Steel Company	16,000
Jessop Steel Company	21,000
Jones & Laughlin Steel Corporation	4,865,920

Products	Annual Capacity Net Tons
Companies (Continued):	
Joslyn Manufacturing & Supply Company	23,800
Judson Steel Corporation	54,000
Kaiser Steel Corporation	1,154,000
Keystone Steel & Wire Company	322,000
Knoxville Iron Company	90,000
Laclede Steel Company	408,000
Latrobe Steel Company	6,500
Le Tourneau Inc., R. G.	50,000
Lockhart Iron and Steel Company	60,000
Lone Star Steel Company	500,000
Lukens Steel Company	636,000
McLouth Steel Corporation	720,000
Mahoning Valley Steel Company	120,000
Merritt-Chapman & Scott Corporation:	
Milton Steel Products Division	60,000
Newport Steel Corporation	540,000
TOTAL	600,000
Midvale Company	60,600
Missouri Rolling Mill Corporation	70,000
National Steel Corporation:	
Great Lakes Steel Corporation	2,788,000
Weirton Steel Company	2,275,000
TOTAL	5,063,000
National Supply Company	448,000
Northern Steel Inc.	15,000
Northwest Steel Rolling Mills, Inc.	42,000
Northwestern Steel & Wire Company	568,000
Oregon Steel Mills	97,700
Pacific States Steel Corporation	147,265
Pacific Steel Rolling Mills, Inc.	5,000
Phoenix Manufacturing Company	100,000
Pittsburgh Steel Company	1,180,000
Pollak Steel Company	90,000
Poor & Company	12,000
Porter Company Inc., H. K.	191,500
Reeves Steel and Manufacturing Company	75,000
Republic Steel Corporation	7,817,000
Rotary Electric Steel Company	158,000
Sharon Steel Corporation	985,000
Sheet Steel Mills Inc.	55,000
Simmons Company	36,000
Simonds Saw and Steel Company	12,200
Solomon Company, M. E.	132,000
Stanley Works	150,000
Superior Steel Corporation	115,000
Sweet's Steel Company	104,000
Texas Steel Company	30,000
Timken Roller Bearing Company	422,500
Tredegar Company	38,500
United States Steel Corporation:	
American Steel and Wire Division	2,641,000
Columbia-Geneva Steel Division	1,925,700
National Tube Division	3,055,600
Tennessee Coal and Iron Division	2,948,800
United States Steel Corp. (Central Operations)	17,905,000
TOTAL	28,476,100
Universal-Cyclops Steel Corporation	66,200
Vanadium-Alloys Steel Company	10,000
Colonial Steel Company	22,400
TOTAL	32,400
Vulcan Crucible Steel Company	3,000
Washburn Wire Company	65,000
Western Rolling Mills, Inc.	15,500
West Virginia Steel and Mfg. Company	75,500
Wheeling Steel Corporation	1,728,000
Wickwire Brothers, Inc.	24,000
Youngstown Sheet and Tube Company	4,387,200
GRAND TOTAL	96,641,240

* Does not include hot rolled wrought iron products, annual capacity 330,000 tons.

States:	
Alabama	3,670,300
California	2,409,865
Colorado	1,041,000
Connecticut	150,000
Delaware	300,000
Georgia	237,000
Illinois	7,662,820
Indiana	12,553,000
Kentucky	1,304,920
Maryland	5,644,000
Massachusetts	299,120
Michigan	5,030,000
Minnesota	298,600
Missouri	542,500
New Jersey	217,195
New York	5,123,360
Ohio	18,996,520
Oklahoma	58,200
Oregon	97,700
Pennsylvania	24,916,640
Rhode Island	65,000
Tennessee	90,000
Texas	1,416,800
Utah	1,410,600
Virginia	38,500
Washington	249,000
West Virginia	2,794,600
Wisconsin	24,000
GRAND TOTAL	96,641,240

OUTSTANDING in the 1954 finishing capacity figures is the continued trend toward light flat-rolled products, widely used for consumer goods. Hot-rolled sheet capacity today represents 33 per cent of total hot-rolling capacity, compared with 30 per cent in 1951 and 26 per cent in 1948.

The trend of increasing capacity for light flat-rolled forms of steel in preference to heavier forms stems from metal consumers' accomplishments in reducing weight of the products and making a pound of steel go farther.

Despite heavy building activity in recent years, capacity to make structural shapes declined. Capacity for heavy structurals went from 5,855,150 tons on Jan. 1, 1951, to 5,565,270 tons on Jan. 1, 1954. Light structurals shrank from 1,058,470 tons in 1948 to 912,360 tons in 1951 and to 635,625 tons in 1954.

Another construction product—rolled steel piling—receded from 282,300 tons in 1951 to 249,400 tons in 1954.

In contrast, concrete reinforcement bars went up from 1,658,060 tons in 1951 to 1,958,480 tons during the current year.

RAILS, LONG JOINT OR SPLICE BARS AND TIE PLATE BARS AND WHEELS AND AXLES (Rolled)

	ANNUAL CAPACITY (N. T.)			
	Rails			
	Standard (over 60 lbs. per yard)	60 lbs. or less per yard	Long joint or splice bars and tie plate bars	Wheels and Axles (Rolled)
Companies:				
Armco Steel Corporation	.....	.....	.....	65,000
Sheffield Steel Corporation	.....	.....	.....	.....
TOTAL	.....	.....	.....	65,000
Baldwin-Lima-Hamilton Corporation	.....	.....	.....	60,000
Bethlehem Steel Corporation:				
Bethlehem Steel Company	516,000	12,000	159,000	150,000
Bethlehem Pacific Coast Steel Corporation	.....	.....	12,000	.....
TOTAL	516,000	12,000	171,000	150,000
Colorado Fuel and Iron Corporation	380,000	5,000	120,000	.....
Edgewater Steel Company	.....	.....	.....	50,000
Inland Steel Company	135,000	.....	50,000	.....
Jones & Laughlin Steel Corporation	.....	.....	.....	.....
National Steel Corporation:				
Weirton Steel Company	.....	.....	(a)	.....
Poor & Company	.....	.....	12,000	.....
Republic Steel Corporation	.....	.....	.....	.....
Sweet's Steel Company	.....	57,000	(b)	.....
Tredegar Company	.....	.....	20,000	.....
United States Steel Corporation:				
Columbia-Geneva Steel Division	.....	.....	74,210	.....
Tennessee Coal and Iron Division	293,000	9,000	184,900	.....
United States Steel Corp. (Central Operations)	683,000	24,000	175,400	131,700
TOTAL	976,000	33,000	434,510	131,700
West Virginia Steel and Manufacturing Co.	.....	5,000	5,000	.....
Youngstown Sheet and Tube Company	.....	.....	.....	.....
GRAND TOTAL	2,007,000	112,000	812,510	456,700

(a) Included in capacity of heavy structural shapes.
(b) Included in capacity of hot rolled bars.

STRUCTURAL SHAPES, STEEL PILING (Rolled) AND PLATES

	ANNUAL CAPACITY (N. T.)			
	Structural Shapes (Heavy)	Steel Piling (Rolled)	Plates	
			Sheared	Universal
Companies:				
Alan Wood Steel Company	.....	.....	145,600	.....
Allegheny Ludlum Steel Corporation	.....	.....	12,000	.....
Armco Steel Corporation	.....	.....	120,000	.....
Sheffield Steel Corporation	46,000	.....	523,000	.....
TOTAL	46,000	.....	643,000	.....
Barium Steel Corporation:				
Central Iron and Steel Company	.....	.....	182,400	105,600
Phoenix Iron & Steel Company	259,000	.....	.....	.....
TOTAL	259,000	.....	182,400	105,600
Bethlehem Steel Corporation:				
Bethlehem Steel Company	1,998,000	140,000	696,000	*388,000
Bethlehem Pacific Coast Steel Corporation	103,000	.....	.....	18,000
TOTAL	2,101,000	140,000	696,000	406,000
Borg-Warner Corporation	.....	.....	8,750	.....
Byers Company, A. M.	.....	.....	*9,000	8,000
Colorado Fuel and Iron Corporation	45,000	.....	307,000	.....
Crucible Steel Company of America	.....	.....	.....	53,765
Disston & Sons, Inc., Henry	.....	.....	5,600	.....
Eastern Stainless Steel Corporation	.....	.....	6,000	.....
Empire Steel Company	.....	.....	.....	25,000
Granite City Steel Co.	.....	.....	132,000	.....
Inland Steel Company	270,000	5,000	425,000	85,000
International Harvester Company	45,000	.....	.....	57,000
Jessop Steel Company	.....	.....	9,300	.....
Jones & Laughlin Steel Corporation	110,000	.....	283,740	10,000
Kaiser Steel Corporation	82,000	.....	193,000	16,000
Le Tourneau Company, Inc., R. G.	.....	.....	50,000	.....
Lone Star Steel Company	.....	.....	50,000	.....
Lukens Steel Company	.....	.....	636,000	.....
National Steel Corporation:				
Weirton Steel Company	(a) 200,000	.....	.....	.....
Pacific States Steel Corporation	42,470	.....	.....	1,030
Republic Steel Corporation	.....	.....	30,000	.....
Sharon Steel Corporation	.....	.....	.....	60,000
Simonds Saw and Steel Company	.....	.....	400	.....
United States Steel Corporation:				
Columbia-Geneva Steel Division	200,000	.....	367,000	.....
Tennessee Coal and Iron Division	130,800	.....	465,700	22,500
United States Steel Corp. (Central Operations)	2,022,000	104,400	2,438,700	341,100
TOTAL	2,352,800	104,400	3,271,400	363,600
Universal-Cyclops Steel Corporation	.....	.....	17,100	.....
Wheeling Steel Corporation	.....	.....	252,000	.....
Youngstown Sheet and Tube Company	12,000	.....	90,000	.....
GRAND TOTAL	5,565,270	249,400	7,455,290	1,190,995

(a) Includes steel piling and tie plates.

* Does not include wrought iron plates, annual capacity 21,000 tons sheared and 62,000 tons universal mill.

HOT-ROLLED SHEETS

	Annual capacity (N. T.)
Companies:	
Alan Wood Steel Company	(a)
Allegheny Ludlum Steel Corporation	120,000
Armco Steel Corporation	1,977,000
Berkman Company, Louis	176,000
Bethlehem Steel Corporation:	
Bethlehem Steel Company	4,592,000
Borg-Warner Corporation	102,750
Byers Company, A. M.	*15,000
Continental Steel Corporation	130,000
Crucible Steel Company of America	70,135
Disston & Sons Inc., Henry	10,600
Eastern Stainless Steel Corporation	30,000
Empire Steel Company	120,000
Ford Motor Company	1,178,000
Granite City Steel Company	684,000
Inland Steel Company	1,900,000
International Harvester Company	7,000
Jessop Steel Company	5,000
Jones & Laughlin Steel Corporation	1,933,760
Kaiser Steel Corporation	134,000
McLouth Steel Corporation	(b) 720,000
Mahoning Valley Steel Company	120,000
Merritt-Chapman & Scott Corporation:	
Newport Steel Corporation	540,000
National Steel Corporation:	
Great Lakes Steel Corporation	2,353,000
Weirton Steel Company	(b) 2,075,000
TOTAL	4,428,000
Pittsburgh Steel Company	568,000
Reeves Steel and Manufacturing Company	75,000
Republic Steel Corporation	2,025,000
Sharon Steel Corporation	150,000
Sheet Steel Mills, Inc.	55,000
Simonds Saw and Steel Company	5,000
Solomon Company, M. E.	132,000
United States Steel Corporation:	
Columbia—Geneva Steel Division	476,600
Tennessee Coal and Iron Division	586,800
United States Steel Corp. (Central Operations)	5,928,900
TOTAL	6,992,300
Universal-Cyclops Steel Corporation	13,100
Vanadium-Alloys Steel Company:	
Colonial Steel Company	2,400
Wheeling Steel Corporation	561,000
Youngstown Sheet and Tube Company	1,932,000
GRAND TOTAL	31,504,045

(a) Included with hot rolled strip.
(b) Includes hot rolled strip.
* Does not include wrought iron sheets and strip, annual capacity 45,000 tons.

HOT-ROLLED STRIP

	Annual capacity (N. T.)
Companies:	
Acme Steel Company	590,000
Alan Wood Steel Company	240,000
Allegheny Ludlum Steel Corporation	400,000
Atlantic Steel Company	66,000
Borg-Warner Corporation	3,000
Buffalo Bolt Company	600
Byers Company, A. M.	(a)
Colorado Fuel and Iron Corporation	1,000
Roebling's Sons Company (John A.)	12,000
TOTAL	13,000
Carpenter Steel Company	9,400
Crucible Steel Company of America	2,520
Detroit Steel Corporation	900,000
Empire Steel Corporation	125,000
Firth Sterling, Inc.	3,600
Inland Steel Company	20,000
International Harvester Company	22,000
Jones and Laughlin Steel Corporation	2,000
Kaiser Steel Corporation	47,000
Knoxville Iron Company	1,500
Laclede Steel Company	78,000
Lone Star Steel Company	(c)
McLouth Steel Corporation	(a)
Merritt-Chapman & Scott Corporation:	
Newport Steel Corporation	(a)
National Steel Corporation:	
Great Lakes Steel Corporation	375,000
Porter Company Inc. H. K.	6,200
Republic Steel Corporation	405,000
Sharon Steel Corporation	775,000
Simonds Saw and Steel Company	800
Stanley Works	150,000
Superior Steel Corporation	115,000
United States Steel Corporation:	
American Steel and Wire Division	133,760
Columbia—Geneva Steel Division	(b) 17,880
Tennessee Coal and Iron Division	80,600
United States Steel Corp. (Central Operations)	538,200
TOTAL	770,440
Washburn Wire Company	38,000
Western Rolling Mills, Inc.	6,500
Youngstown Sheet and Tube Company	12,000
GRAND TOTAL	5,177,560

(a) Included in capacity of hot rolled sheets.
(b) Also see capacity of hot rolled sheets.
(c) Included in capacity of skelp.

COILS FOR COLD-REDUCED BLACK PLATE AND TIN PLATE

	Annual capacity (N. T.)
Companies:	
Bethlehem Steel Corporation:	
Bethlehem Steel Company	1,343,000
Granite City Steel Company	108,000
Inland Steel Company	330,000
Jones & Laughlin Steel Corporation	600,000
Kaiser Steel Corporation	197,000
National Steel Corporation:	
Weirton Steel Company	(a)
Republic Steel Corporation	300,000
United States Steel Corporation:	
Columbia-Geneva Steel Division	367,000
Tennessee Coal and Iron Division	739,200
United States Steel Corp. (Central Operations)	1,925,700
TOTAL	3,031,900
Wheeling Steel Corporation	432,000
Youngstown Sheet and Tube Company	360,000
GRAND TOTAL	6,701,900

(a) Included in capacity of hot rolled sheets.

Hot-dipping of tin plate is giving way to electrolytic tinning. Impetus was given this trend in World War II when it was necessary to make limited supplies of tin go as far as possible. Now steel producers are going even further: They're using the electrolytic process to make a differentially coated product—tin plate with less tin on one side than the other.

From the beginning of 1951 to 1954, capacity to make hot-dipped tin and terne plate dropped from 3,200,770 tons to 2,748,-680 tons, while capacity to produce electrolytic tin plate jumped from 3,252,570 tons to 4,475,050 tons.

HOT-ROLLED BARS AND LIGHT STRUCTURAL SHAPES

	ANNUAL CAPACITY (N. T.)		
	Bars—Other than Concrete Reinforcement	Bars—Concrete Reinforcement	Light Structural Shapes
Companies:			
Allegheny Ludlum Steel Corporation	65,800	.....	1,280
American Compressed Steel Company	.....	12,000	.....
Ames & Company, W.	30,000	.....	(a)
Armco Steel Corporation	27,000	.....	.....
Sheffield Steel Corporation	224,000	158,700	87,000
TOTAL	251,000	158,700	87,000
Atlantic Steel Company	25,000	37,000	33,000
Bethlehem Steel Corporation:			
Bethlehem Steel Company	1,831,000	306,000	180,000
Bethlehem Pacific Coast Steel Corporation	240,000	210,000	49,000
TOTAL	2,071,000	516,000	229,000
Borg-Warner Corporation	92,000	45,000	(a)
Braeburn Alloy Steel Corporation	3,200	.....	.....
Buffalo Bolt Company	40,500	.....	.....
Byers Company, A. M.	*5,000	.....	.....
Carpenter Steel Company	29,600	.....	.....
Colorado Fuel and Iron Corporation	50,000	40,000	15,000
Columbia Tool Steel Company	1,800	.....	.....
Copperweld Steel Company	373,500	.....	.....
Crucible Steel Corpmpany of America	562,000	.....	.....
Disston & Sons, Inc., Henry	22,400	.....	.....
Falls Hollow Staybolt Company	8,000	.....	.....
Firth Sterling, Inc.	5,000	.....	.....
Ford Motor Company	186,000	.....	.....
Green River Steel Corporation	241,920	.....	.....
Highland Iron & Steel, Inc.	41,000	.....	(a)
Hooter Steel Corporation	15,000	.....	.....
Inland Steel Company	443,000	62,000	60,000
International Harvester Company	503,000	.....	33,000
Jersey Shore Steel Company	16,000	.....	(a)
Jessop Steel Company	6,700	.....	.....
Jones & Laughlin Steel Corporation	673,140	42,000	50,000
Joslyn Manufacturing & Supply Company	22,600	.....	1,200
Judson Steel Corporation	14,000	40,000	.....
Kaiser Steel Corporation	86,000	8,000	(a)
Knoxville Iron Company	51,500	23,100	13,900
Laclede Steel Company	35,500	98,000	24,500
Latrobe Steel Company	6,500	.....	.....
Lockhart Iron and Steel Company	60,000	.....	(a)
Merritt-Chapman & Scott Corporation	25,000	35,000	.....
Missouri Rolling Mill Corporation	16,500	53,500	.....
National Steel Corporation:			
Great Lakes Steel Corporation	60,000	.....	.....
Northern Steel, Inc.	.....	12,000	3,000
Northwest Steel Rolling Mills, Inc.	12,000	30,000	.....
Northwestern Steel & Wire Company	288,000	(a)	.....
Oregon Steel Mills	20,400	67,100	10,200
Pacific States Steel Corporation	36,330	49,190	18,245
Pacific Steel Rolling Mills, Inc.	5,000	.....	(a)
Phoenix Manufacturing Company	90,000	10,000	.....
Pollak Steel Company	45,000	45,000	.....
Porter Company, H. K.	68,300	93,700	23,300
Republic Steel Corporation	(b) 3,251,000	(a)	.....
Rotary Electric Steel Company	158,000	.....	.....
Simmons Company	33,000	3,000	(a)
Simonds Saw and Steel Company	6,000	.....	.....
Sweet's Steel Company	(c) 47,000	(a)	.....
Texas Steel Company	6,000	24,000	.....
Timken Roller Bearing Company	142,500	.....	.....
Tredegar Company	15,000	3,500	.....
United States Steel Corporation:			
American Steel and Wire Division	133,850	.....	.....
Columbia-Geneva Steel	69,610	136,290	(a)
Tennessee Coal and Iron Division	167,500	81,000	(a)
United States Steel Corp. (Central Operations)	2,969,100	212,400	(a)
TOTAL	3,340,060	429,690	(a)
Universal-Cyclops Steel Corporation	20,400	.....	.....
Vanadium-Alloys Steel Company	10,000	.....	.....
Colonial Steel Company	20,000	.....	.....
TOTAL	30,000	.....	.....
Vulcan Crucible Steel Company	3,000	.....	.....
West Virginia Steel and Manufacturing Co.	15,000	15,000	15,000
Western Rolling Mills, Inc.	9,000	.....	.....
Youngstown Sheet and Tube Company	396,000	6,000	18,000
GRAND TOTAL	14,176,150	1,958,480	635,625

(a) Included in capacity of bars—other than concrete reinforcement.
(b) Includes concrete reinforcement bars and tube rounds.
(c) Includes splice bars, tie plates and rerolled concrete reinforcement bars.

WIRE RODS

	Annual capacity (N. T.)
Companies:	
Allegheny Ludlum Steel Corporation	21,200
American Chain & Cable Company, Inc.	175,000
Armco Steel Corporation	21,000
Sheffield Steel Corporation	297,000
TOTAL	318,000
Atlantic Steel Company	76,000
Bethlehem Steel Corporation:	
Bethlehem Steel Company	731,000
Bethlehem Pacific Coast Steel Corporation	82,000
TOTAL	813,000
Buffalo Bolt Company	24,500
Carpenter Steel Company	12,800
Colorado Fuel and Iron Corporation	270,000
Roebling's Sons Corporation (John A.)	165,000
TOTAL	435,000
Continental Steel Corporation	300,000
Copperweld Steel Company	55,000
Crucible Steel Company of America	14,675
Detroit Steel Corporation	200,000
Driver Company, Wilbur B.	6,000
Firth Sterling, Inc.	2,000
Jones & Laughlin Steel Corporation	264,000
Keystone Steel & Wire Company	322,000
Laclede Steel Company	95,000
Northwestern Steel & Wire Company	280,000
Pittsburgh Steel Company	237,000
Republic Steel Corporation	400,000
United States Steel Corporation:	
American Steel and Wire Division	2,373,390
Columbia-Geneva Steel Division	217,110
Tennessee Coal and Iron Division	187,800
TOTAL	2,778,300
Universal-Cyclops Steel Corporation	11,700
Washburn Wire Company	27,000
Wickwire Brothers, Inc.	24,000
Youngstown Sheet and Tube Company	109,200
GRAND TOTAL	7,001,375

SKELP

	Annual capacity (N. T.)
Companies:	
Bethlehem Steel Corporation:	
Bethlehem Steel Company	482,000
Borg-Warner Corporation	10,000
Byers Company, A. M.	(a) 3,000
Jones & Laughlin Steel Corporation	440,000
Kaiser Steel Corporation	391,000
Laclede Steel Company	77,000
Lone Star Steel Company	450,000
Republic Steel Corporation	1,206,000
United States Steel Corporation:	
National Tube Division	796,500
United States Steel Corp. (Central Operations)	380,400
TOTAL	1,176,900
Wheeling Steel Corporation	483,000
Youngstown Sheet and Tube Company	912,000
GRAND TOTAL	5,630,900

(a) Does not include wrought iron skelp, annual capacity 157,000 tons.

BLANKS, TUBE ROUNDS OR PIERCED BILLETS FOR SEAMLESS TUBES

	Annual capacity (N. T.)
Companies:	
Babcock & Wilcox Company	138,000
Byers Company, A. M.	(b)
Colorado Fuel and Iron Corporation	200,000
Copperweld Steel Company	50,000
Crucible Steel Company of America	(a)
Inland Steel Company	5,000
Jones & Laughlin Steel Corporation	420,000
National Supply Company	448,000
Pittsburgh Steel Company	375,000
Republic Steel Corporation	200,000
Timken Roller Bearing Company	280,000
United States Steel Corporation:	
National Tube Division	2,259,100
United States Steel Corp. (Central Operations)	30,000
TOTAL	2,289,100
Youngstown Sheet and Tube Company	540,000
GRAND TOTAL	4,945,100

(a) Included in capacity of bars—other than concrete reinforcement.
(b) Included in capacity of skelp.

BLOOMS AND BILLETS (Forging or Export)

	Annual capacity (N. T.)
Companies:	
Alan Wood Steel Company	37,500
Allegheny Ludlum Steel Corporation	3,280
Armco Steel Corporation	10,000
Sheffield Steel Corporation	16,800
TOTAL	26,800
Berkman Company, Louis:	
Ohio River Steel Division	136,080
Bethlehem Steel Corporation:	
Bethlehem Steel Corporation	292,000
Harrisburg Steel Corporation	135,000
Inland Steel Company	12,000
International Harvester Company	68,000
GRAND TOTAL	700,660

ALL OTHER HOT-ROLLED PRODUCTS

	Annual capacity (N. T.)
Companies:	
American Locomotive Company	123,000
Bethlehem Steel Company	24,000
Borg-Warner Corporation	2,500
Colorado Fuel and Iron Corporation	48,000
Edgewater Steel Company	34,000
Firth Sterling, Inc.	6,000
Jones & Laughlin Steel Corporation	37,280
Midvale Company	60,000
Universal-Cyclops Steel Company	3,900
West Virginia Steel & Mfg. Company	20,600
TOTAL	360,280

COLD-FINISHED BARS

	Annual capacity (N. T.)
Companies:	
Allegheny Ludlum Steel Corporation	*28,600
Anchor Drawn Steel Company	2,850
Armco Steel Corporation	21,000
Atlantic Wire Company	1,200
Bethlehem Steel Company	57,000
Bliss & Laughlin, Inc.	462,000
Buffalo Bolt Company	2,200
Carpenter Steel Company	24,000
Columbia Steel & Shafting Company	130,000
Compressed Steel Shafting Company	20,000
Copperweld Steel Company	58,100
Crucible Steel Company of America	156,160
Cumberland Steel Company	50,000
Cuyahoga Steel & Wire Company	25,000
Eaton Manufacturing Company (Reliance Division)	12,240
Firth Sterling, Inc.	2,800
Fitzsimons Steel Company	50,000
Fort Howard Steel & Wire	15,000
International Harvester Company	54,700
Jones & Laughlin Steel Corporation	384,000
Joslyn Manufacturing & Supply Company	30,000
Keystone Drawn Steel Company	33,700
Kidd Drawn Steel Company	4,500
La Salle Steel Company	334,000
Latrobe Steel Company	1,500
Medart Company	1,200
Moltrup Steel Products Company	72,000
Monarch Steel Company, Inc.	40,000
Nelson Steel & Wire Company	20,000
Pacific Tube Company	18,000
Pilgrim Drawn Steel Division	138,000
Pittsburgh Tool Steel Wire Company	7,400
Precision Drawn Steel Company	60,000
Republic Steel Corporation	170,000
Rotary Electric Steel Company	114,000
Sierra-Drawn Steel Corporation	30,000
Sierra-Drawn Steel Corporation of the Northwest	6,000
Superior Drawn Steel Company	36,000
Timken Roller Bearing Company	118,000
United States Steel Corporation:	
American Steel and Wire Company	56,030
United States Steel Corp. (Central Operations)	7,900
TOTAL	63,930
Universal-Cyclops Steel Company	7,350
Western Automatic Machine Screw Company	53,500
Worcester Pressed Steel Company	3,000
Wyckoff Steel Company	458,200
Youngstown Sheet and Tube Company	90,000
TOTAL	3,761,730

* Includes capacity of drawn wire.

PIPE AND TUBING

	ANNUAL CAPACITY (N. T.)					
	Buttweld	Lapweld	Seamless	Electric-weld	Spiral-weld	Gasweld
Companies:						
A P Parts Corporation	....	....	....	12,000	....	....
Allegheny Ludlum Steel Corporation	....	....	1,800	....	....	....
Wallingford Steel Company	....	....	....	3,000	....	1,000
TOTAL	....	....	1,800	3,000	....	1,000
American Metal Products Company	....	....	....	32,000	....	....
American Pipe & Steel Corporation	....	....	....	13,000	....	....
Armco Steel Corporation	....	....	....	35,000	75,000	....
Avon Tube Division, Higbie Manufacturing Company	....	....	....	3,500	....	....
Babcock & Wilcox Company	....	....	192,000	60,000	....	....
Basalt Rock Company	....	....	....	420,000	....	....
Behlen Manufacturing Company	....	....	....	5,000	....	....
Berger Machine Parts, Inc.	....	....	....	3,600	....	....
Bethlehem Steel Company	338,500	240,000	....	....	....	....
Bundy Tubing Company	....	....	....	12,000	....	37,500
Byers Company, A. M.	47,000	90,000	....	....	....	....
Central Steel Tube Company	....	....	....	13,500	....	....
Colorado Fuel and Iron Corporation	....	....	180,000	48,000	....	....
Columbia Steel & Shafting Company	....	....	14,000	....	....	....
Copperweld Steel Company	....	....	40,000	8,400	....	....
Damascus Tube Company	....	....	....	1,250	....	....
Electroweld Steel Corporation	....	....	....	7,000	....	....
Formed Tubes, Inc.	....	....	....	7,200	....	....
Fretz-Moon Tube Co., Inc.	70,000	....	....	....	....	....
Gaychrome Company	....	....	....	3,000	....	....
Globe Steel Tubes Company	....	....	125,000	1,500	....	....
Harris Tube, Inc.	....	....	....	5,000	....	....
Hofmann Industries, Inc.	....	....	....	15,000	....	....
Ivins Steel Tube Works, Inc.	....	....	1,300	....	....	....
Jones & Laughlin Steel Corporation	190,000	120,000	450,000	45,000	....	....
Kaiser Steel Corporation	135,000	....	....	208,000	....	....
Kaiser Motors Corporation	....	....	....	6,600	....	....
Kane Boiler Works, Inc.	....	....	....	18,000	....	....
Laclede Steel Company	60,000	....	....	24,000	....	5,000
Lone Star Steel Company	....	....	....	360,000	....	....
Mahoning Valley Steel Company	....	....	....	12,000	....	....
Mark & Company, Clayton	....	....	....	32,000	....	....
Master Tank & Welding, Ltd.	....	....	....	100,000	....	....
Merritt-Chapman & Scott Corp.:						
Newport Steel Corporation	....	....	....	95,000	....	....
Michigan Seamless Tube Co.	....	....	25,000	....	....	....
Monroe Auto Equipment Company	....	....	....	7,000	....	....
National Supply Company	240,000	60,000	380,000	7,200	....	....
Naylor Pipe Company	....	....	....	....	24,000	....
Nikoh Tube Company	....	....	....	200,000	....	....
Pacific Tube Company	....	....	12,500	7,500	....	....
Pittsburgh Steel Company	....	....	310,000	....	....	....
Pittsburgh Tube Company	47,000	....	....	....	....	....
Republic Steel Corporation	250,000	....	180,000	770,000	....	....
Sawhill Tubular Products, Inc.	100,000	....	....	60,000	....	....
Service Steel Company	2,500	....	1,000	....	....	....
Sharon Steel Corporation	....	....	....	64,800	....	....
Sharon Tube Company	48,000	....	....	....	....	....
Shwayder Brothers, Inc.	....	....	....	10,000	....	....
Smith Corporation, A. O.	....	....	....	620,000	....	....
Smith Corp. of Texas, A. O.	....	....	....	480,000	....	....
Simmons Company	3,100	....	....	....	....	....
South Chester Tube Company	....	108,000	....	....	....	....
Southeastern Metals Co., Inc.	....	....	....	10,000	....	....
Southern Pipe & Casing Company	....	....	....	80,000	....	....
Standard Tube Company	....	....	....	60,000	....	....
State Canvas & Frame	....	....	....	3,900	....	....
Superior Tube Company	....	....	2,200	450	....	....
Taylor Forge & Pipe Works	....	....	....	12,000	72,000	....
Timken Roller Bearing Company	....	....	233,000	....	....	....
Toledo Steel Tube Company	....	....	....	11,000	....	....
Tube Reducing Corporation	....	....	30,000	....	....	....
United States Steel Corporation:						
Consolidated Western Steel Division	....	....	....	870,000	....	....
National Tube Division	848,000	....	2,014,330	215,640	....	....
TOTAL	848,000	....	2,014,330	1,085,640	....	....
United Tube Corp. of Ohio	....	....	....	12,000	....	....
Universal Products Co., Inc.	....	....	....	12,000	....	....
Wheatland Tube Company	130,000	....	....	10,000	....	....
Wheeling Steel Corporation	360,000	....	....	....	....	....
Wolverine Tube Division Calumet & Hecla, Inc.	....	....	....	6,000	....	....
Youngstown Sheet & Tube Co.	528,000	....	456,000	348,000	....	....
TOTAL	3,387,100	618,000	4,648,130	5,487,040	171,000	33,500

EXPANDED use of pipes and tubing as a means of transportation and hollow forms that do the work of a heavier, solid form are reflected in the Jan. 1, 1954, capacities of most kinds of tubular goods. Electricweld tubing capacity on that date was 5,487,040 net tons, compared with 5,127,700 three years earlier and only 2,025,400 on Jan. 1, 1948. Seamless tubing capacity rose to 4,648,130 net tons on Jan. 1, 1954, from 3,960,900 tons on Jan. 1, 1951, and 3,462,800 on Jan. 1, 1948.

Increases were shown also by buttweld, lapweld, spiralweld and gasweld pipe. The rise in seamless tubing capacity necessitated a continued increase in capacity for making blanks, tube rounds and pierced billets for seamless tubes. Another pipemaking material — skelp—continued to increase.

THE STEEL industry in the United States is made up of 255 companies. There are 430 plants making or shaping iron or steel in 270 communities in 31 states. Fifteen years ago there were 360 plants in 27 states.

Capacity for hot-rolling steel is located in 28 states. Three other states have steel finishing capacity. Pennsylvania, Ohio, Indiana and Illinois lead in hot-rolled capacity. During the past three years, Pennsylvania had the largest increase in capacity, followed by Ohio and Indiana.

Basic Capacity Up—The Industry boosted its ingot capacity from 104,502,680 net tons on Jan. 1, 1951, to 124,330,410 net tons as of Jan. 1, 1954. That's an increase of 19,827,730 tons, or 19 per cent.

Open-hearth capacity increased tonnagewise more than electric furnace capacity, but percentagewise the increase was less. Open-hearth capacity rose 17,783,880 tons, or 19 per cent. Electric furnace capacity jumped 2,877,850 tons, or 38 per cent. Bessemer capacity declined 834,000 tons, or 15 per cent.

Furnaces Bigger—Furnace sizes continued to increase. Despite growth in open-hearth capacity, there were 14 fewer furnaces in 1954 than there were three years earlier.

Similarly, expanded electric furnace capacity was achieved by a small increase in the number of furnaces. On Jan. 1, 1954, there were 260 electrics in the United States, compared with 257 three years earlier.

Eighty-five companies make raw steel now, compared with 76 three years ago. Their plants are in 120 communities in 27 states.

Pennsylvania, Ohio, Indiana and Illinois are the largest producers of raw steel. Ohio had the largest increase over the last three years, followed closely by Pennsylvania.

Statistics included in the accompanying tables were compiled by the Statistical Division of the American Iron & Steel Institute under the guidance of the Committee on Statistics.

WIRE AND WIRE PRODUCTS

	ANNUAL CAPACITY (N. T.)						
	Plain wire	Galvanized wire	Nails and staples	Barbed wire	Woven fence	Reinforcing fabric and netting	Bale tie
Companies:							
Alan Wood Steel Co.	....	....	*4,900	....	....	....	....
American Chain & Cable Co., Inc.	92,000	25,000	....	600	7,200	....	....
Angell Nail & Chaplet Co.	22,000	....	18,000	....	....	....	....
Armco Steel Corporation	6,200	....	....	....	....	....	....
Sheffield Steel Corporation	238,000	68,000	63,100	26,400	30,500	40,600	10,000
TOTAL	244,200	68,000	63,100	26,400	30,500	40,600	10,000
Atlantic Steel Company	87,600	31,000	43,000	13,000	35,000	....	6,000
Atlantic Wire Company	24,000	1,800	....	....	....	....	....
Atlas Tack Corporation	5,000	....	4,900	....	....	....	....
Behlen Manufacturing Co.	9,000	....	....	....	....	5,000	....
Bethlehem Steel Corporation:							
Bethlehem Steel Company	565,000	150,000	85,000	21,000	14,000	....	12,000
Bethlehem Pacific Coast Steel Corp.	60,000	....	....	....	....	....	....
TOTAL	625,000	150,000	85,000	21,000	14,000	....	12,000
Buffalo Bolt Company	24,000	....	....	....	....	....	....
Carpenter Steel Company	800	....	....	....	....	....	....
Cedarburg Wire, Nail & Screw Co.	1,200	....	1,200	....	....	....	....
Chicago Steel & Wire Co.	23,000	2,500	....	....	....	....	....
Colorado Fuel and Iron Corp.	394,180	97,500	54,000	32,400	21,700	110,900	2,660
Roebling's Sons Corp., John A.	124,000	24,000	....	....	....	....	....
TOTAL	518,180	121,500	54,000	32,400	21,700	110,900	2,660
Continental Steel Corp.	225,000	60,000	51,500	31,000	70,000	....	20,000
Copperweld Steel Company	55,000	....	....	175	....	....	....
Cuyahoga Steel & Wire Co.	20,000	....	....	....	....	....	....
Davis Wire & Cable Corp., K. H.	12,000	1,200	....	....	....	1,500	....
Detroit Steel Corporation	135,000	30,000	....	....	....	40,000	....
Driscoll Wire Company	7,200	....	....	....	....	....	....
Driver Company, Wilbur B.	2,000	....	....	....	....	....	....
Edward Company, E. H.	6,500	3,600	....	....	....	4,900	....
Enterprise Wire Company	6,000	1,200	....	....	....	....	....
Fine Stainless Steel Co., Inc.	500	....	....	....	....	....	....
Ford Motor Company	52,000	....	....	....	....	....	....
Gilbert & Bennett Mfg. Co.	30,000	7,200	....	....	6,000	16,000	....
Igoe Brothers, Inc.	30,000	....	2,500	....	....	....	....
Jones & Laughlin Steel Corp.	270,000	68,400	66,000	36,000	14,400	....	....
Joslyn Mfg. & Supply Co.	3,000	....	....	....	....	....	....
Kenmore Metals Corporation	7,500	....	....	....	....	....	....
Keystone Steel & Wire Co.	300,000	165,000	60,000	50,000	233,000	29,000	....
Mid-States Steel & Wire Co.	91,200	47,200	12,500	15,000	25,500	....	5,500
TOTAL	391,200	212,200	72,500	65,000	258,500	29,000	5,500
Laclede Steel Company	110,000	10,000	....	....	....	30,000	....
Macwhyte Company	9,300	700	....	....	....	....	....
Madison Wire Company, Inc.	5,000	....	....	....	....	....	....
Maryland Fine & Spec. Wire Co., Inc.	1,200	....	....	....	....	....	....
National-Standard Company	40,000	....	....	....	....	....	....
New England High Carbon Wire Co.	14,400	....	....	....	....	....	....
Nichols Wire & Aluminum Co.	45,400	6,200	11,500	3,800	8,100	....	2,200
Northwestern Steel & Wire Co.	270,000	110,000	52,000	27,000	57,600	89,000	64,700
Pittsburgh Steel Company	324,000	100,000	45,500	20,000	125,000	....	....
Johnson Steel & Wire Co., Inc.	31,800	1,200	....	....	....	....	....
TOTAL	355,800	101,200	45,500	20,000	125,000	....	....
Porter Company, Inc., H. K.	3,500	....	....	....	....	....	....
Prentiss & Company, Geo. W.	4,750	....	....	....	....	....	....
Reid-Avery Company, Inc.	15,000	....	....	....	....	....	....
Republic Steel Company	348,000	110,000	113,000	35,000	41,000	....	13,000
Seneca Wire & Mfg. Co.	15,000	1,000	....	....	....	....	....
Sherman Steel & Wire Co.	1,800	1,100	....	....	....	....	....
Smith Company, Ivy H.	10,000	....	....	....	....	10,000	....
Spencer Wire Corporation	21,000	....	....	....	....	....	....
Thompson Wire Company	12,000	....	....	....	....	....	....
Townsend Company	100,000	....	5,000	....	....	....	....
Union Wire Rope Corp.	60,000	....	....	....	....	....	....
United States Steel Corporation:							
American Steel & Wire Division	2,011,900	519,570	361,350	182,690	218,500	167,390	24,790
Columbia-Geneva Steel Division	52,050	20,440	55,700	4,190	6,660	1,000	3,450
Tennessee Coal and Iron Division	184,000	84,500	90,700	39,400	60,100	850	74,200
TOTAL	2,247,950	624,510	507,750	226,280	285,260	169,240	102,440
Universal-Cyclops Steel Corp.	6,000	....	....	....	....	....	....
Washburn Wire Company	14,700	....	....	....	....	....	....
Western Auto. Machine Screw Co.	12,000	....	....	....	....	....	....
Wheeling Steel Corporation	....	....	*14,400	....	....	....	....
Wickwire Brothers, Inc.	8,000	1,000	5,200	200	....	8,000	....
Wilson Steel & Wire Co.	35,000	10,000	15,000	....	....	....	....
Wright Steel & Wire Co., G. F.	15,000	4,500	....	....	....	3,000	....
Youngstown Sheet & Tube Co.	72,000	15,000	....	....	....	....	....
GRAND TOTAL	6,781,680	1,778,810	1,235,950	537,855	974,260	557,140	238,500

* Cut nails.

SHEETS (Cold-Rolled, Galvanized and Long Terne)

	ANNUAL CAPACITY (N. T.)		
	Cold rolled sheets	Galvanized sheets	Long terne sheets
Companies:			
Allegheny Ludlum Steel Corporation	25,000	....	....
Armco Steel Corporation	1,568,000	414,000	60,000
Berkman Company, Louis	....	114,000	27,500
Bethlehem Steel Corporation:			
Bethlehem Steel Company	2,460,000	288,000	....
Continental Steel Corporation	....	120,000	....
Crucible Steel Company of America	42,300	....	....
Detroit Steel Corporation	430,000	....	....
Eastern Stainless Steel Corporation	30,000	....	....
Empire Steel Corporation	....	....	18,000
Follansbee Steel Corporation	100,000	....	31,300
Ford Motor Company	707,400	....	....
Granite City Steel Company	252,000	144,000	....
Inland Steel Company	850,000	180,000	....
Jones & Laughlin Steel Corporation	1,126,000	....	....
McLouth Steel Corporation	99,840	....	....
Merritt-Chapman & Scott Corporation:			
Newport Steel Corporation	....	84,000	....
National Steel Corporation:			
Great Lakes Steel Corporation	2,220,000	....	....
Weirton Steel Company	750,000	150,000	30,000
TOTAL	2,970,000	150,000	30,000
Pittsburgh Steel Company	360,000	....	....
Reeves Steel and Manufacturing Company	....	42,000	....
Republic Steel Corporation	1,650,000	440,000	....
Sharon Steel Corporation	....	51,600	15,600
Sheet Steel Mills, Inc.	....	55,000	....
Solomon Company, M. E.	....	56,000	....
United States Steel Corporation:			
Columbia-Geneva Steel Division	324,540	178,420	....
Tennessee Coal and Iron Division	397,000	159,800	....
United States Steel Corp. (Central Operation)	2,064,600	361,000	56,300
TOTAL	2,786,140	699,020	56,300
Washington Steel Corporation	18,000	....	....
Wheeling Steel Corporation	480,000	474,000	50,000
Youngstown Sheet and Tube Company	1,044,000	....	....
GRAND TOTAL	16,988,680	3,311,620	288,600

STRIP (Cold-Rolled and Galvanized)

	ANNUAL CAPACITY (N. T.)	
	Cold rolled strip	Galvanized strip
Companies:		
Acme Steel Company	332,640	124,000
Allegheny Ludlum Steel Corporation	182,000	....
Wallingford Steel Company	75,000	....
TOTAL	257,000	..
American Chain & Cable Co., Inc.	5,000	....
American Shim Steel Company	36,000	....
Atlantic Steel Company	....	13,000
Blair Strip Steel Company	48,000	....
Buffalo Bolt Company	2,500	....
Calstrip Steel Corporation	30,000	....
Carpenter Steel Company	12,030	....
Cleveland Cold Rolling Mills Company	240	....
Cold Metal Products Company	80,000	18,000
Colorado Fuel and Iron Corporation:		
Roebling's Sons Corporation, John A.	28,000	10,000
Crown Cork & Seal Company	180,000	....
Crucible Steel Company of America	25,800	....
Detroit Steel Corporation	222,000	....
Elco Steel Products Co.	36,000	....
Elliott Brothers Steel Company	23,000	....
Firth Sterling, Inc.	500	....
Follansbee Steel Corporation	150,000	....
Greer Steel Company	87,000	12,000
Griffin Manufacturing Company	34,000	....
Hind Steel Company, Inc.	5,000	....
Hofmann Industries Inc.	24,000	....
Igoe Brothers Inc.	1,000	....
Inland Steel Company	24,000	....
Jones & Laughlin Steel Corporation	24,000	....
Kaiser Steel Corporation	43,000	....
McLouth Steel Corporation	(a)	....
National-Standard Company	9,000	....
National Steel Corporation:		
Weirton Steel Company	175,000	140,000
Newman-Crosby Steel Corporation	29,000	....
Pittsburgh Steel Company	120,000	34,200
Porter Company, Inc., H. K.	400	....
Republic Steel Corporation	225,000	(b)
Rhode Island Steel Corporation	3,000	....
Rodney Metals, Inc.	20,000	..
Rome Strip Steel Company, Inc.	37,000	....
Sharon Steel Corporation	269,000	63,000
Simonds Saw & Steel Company	200	....
Stanley Works	210,700	....
Superior Steel Corporation	80,000	....
Thompson Wire Company	110,000	....
United States Steel Corporation:		
American Steel and Wire Division	214,410	22,530
Columbia-Geneva Steel Division	42,260	....
TOTAL	256,670	22,530
Universal-Cyclops Steel Corporation	15,000	....
Wallace Barnes Company	15,000	....
Washburn Wire Company	23,100	....
Worcester Pressed Steel Company	4,500	....
GRAND TOTAL	3,303,280	436,730

(a) Included with cold rolled sheets.
(b) Included with galvanized sheets.

HOT-DIPPED TIN AND TERNE PLATE AND ELECTROLYTIC TIN PLATE

	ANNUAL CAPACITY (N. T.)		
	Hot dipped tin and terne plate	Electrolytic tin plate	Total
Companies:			
Bethlehem Steel Corporation:			
Bethlehem Steel Company	330,000	630,000	960,000
Crown Cork & Seal Company, Inc.	27,000	180,000	207,000
Granite City Steel Company	....	78,000	78,000
Inland Steel Company	145,000	220,000	365,000
Jones & Laughlin Steel Corporation	112,400	392,000	504,400
Kaiser Steel Corporation	70,000	130,000	200,000
National Steel Corporation:			
Weirton Steel Company	318,600	625,000	943,600
Republic Steel Corporation	120,000	180,000	300,000
United States Steel Corporation:			
Columbia-Geneva Steel Division	172,780	251,650	424,430
Tennessee Coal and Iron Division	399,100	278,000	677,100
United States Steel Corp. (Central Operations)	718,800	1,048,400	1,767,200
TOTAL	1,290,680	1,578,050	2,868,730
Wheeling Steel Corporation	167,000	234,000	401,000
Youngstown Sheet and Tube Company	168,000	228,000	396,000
GRAND TOTAL	2,748,680	4,475,050	7,223,730

SPLICE BARS, OTHER RAIL JOINTS, TIE PLATES AND TRACK SPIKES

	Splice Bars and Other Rail Joints	Tie Plates	Track Spikes
Companies:			
Armco Steel Corporation:			
Sheffield Steel Corporation	....	....	24,000
Bethlehem Steel Corporation:			
Bethlehem Steel Company	35,500	111,000	36,000
Bethlehem Pacific Coast Steel Corporation	....	12,000	4,000
TOTAL	35,500	123,000	40,000
Colorado Fuel & Iron Corporation	50,000	150,000	20,000
Inland Steel Company	20,000	40,000	24,000
Jones & Laughlin Steel Corporation	....	....	36,000
National Steel Corporation:			
Weirton Steel Company	....	....	6,000
Republic Steel Corporation	....	....	35,000
Tredegar Company	....	....	6,000
United States Steel Corporation:			
American Steel and Wire Division	136,150	....	....
Columbia-Geneva Steel Division	....	73,870	....
Tennessee Coal and Iron Division	62,900	150,200	30,000
United States Steel Corp. (Central Operations)	54,700	145,300	....
TOTAL	253,750	369,370	30,000
West Virginia Steel & Mfg. Company	3,000	....	....
Youngstown Sheet and Tube Company	....	....	28,800
GRAND TOTAL	362,250	682,370	249,800

Changes in modes of transportation are reflected in the shifts of steel finishing capacities. While facilities for making products widely used in automobiles are up sharply, capacity for producing railroad steel is down. Standard steel rail capacity dropped from 2,383,600 tons in 1951 to 2,007,000 tons this year. Capacity for light rails also dropped, as did facilities for making track spikes and some other railroad items.

By contrast, cold-rolled sheet capacity rose 47 per cent from 1951 to 1954, or from 11,498,330 tons to 16,988,680 tons. Even more pronounced is the increase from 1948, when it was only 8,758,845 tons. That's a jump of 94 per cent in six years.

Cold-finished bar capacity in the same six years rose only 17 per cent, from 3,217,260 tons in 1948 to 3,761,730 tons in 1954.

Steel Ingots . . .

ANNUAL STEEL CAPACITY (Ingots and Steel for Castings) as of Jan. 1, 1954

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Kinds:							
Open hearth—basic	901	108,279,490	....	.....	....	.....	108,279,490
Open hearth—acid	33	815,240	....	.....	....	.....	815,240
Bessemer	....	.....	(d) 33	4,787,000	....	.....	4,787,000
Electric	....	.....	....	.....	255	10,448,640	10,448,640
Crucible	....	.....	....	.....	1	40	40
TOTAL	934	109,094,730	(d) 33	4,787,000	256	10,448,680	124,330,410
Companies:							
Alan Wood Steel Co.	8	625,090	....	.....	....	.....	625,090
Allegheny Ludlum Steel Corporation	5	240,000	....	.....	31	624,200	864,200
American Compressed Steel Corp.	....	.....	....	.....	1	(f) 21,600	(f) 21,600
American Locomotive Co.	6	181,000	....	.....	....	.....	181,000
Armco Steel Corporation	25	2,762,000	....	.....	9	406,000	3,168,000
Sheffield Steel Corp.	14	1,434,000	....	.....	2	300,000	1,734,000
TOTAL	39	4,196,000	....	.....	11	706,000	4,902,000
Atlantic Steel Company	3	188,000	....	.....	1	112,000	300,000
Babcock & Wilcox Company	....	.....	....	.....	4	229,450	229,450
Baldwin-Lima-Hamilton Corp.	5	169,920	....	.....	(a) 1	40	169,960
Barium Steel Corporation:							
Central Iron & Steel Co.	5	360,000	....	.....	1	46,000	406,000
Industrial Forge & Steel, Inc.	2	48,600	....	.....	....	.....	48,600
Phoenix Iron & Steel Co.	6	432,000	....	.....	....	.....	432,000
TOTAL	13	840,600	....	.....	1	46,000	886,600
Berkman Company, Louis Ohio River Steel Div.	4	136,080	....	.....	....	.....	136,080
Bethlehem Steel Corp:							
Bethlehem Steel Co.	126	17,106,000	3	336,000	4	158,000	17,600,000
Bethlehem Pacific Coast Steel Corp.	10	498,000	....	.....	3	402,000	900,000
TOTAL	136	17,604,000	3	336,000	7	560,000	18,500,000
Borg-Warner Corporation	....	.....	....	.....	6	(h)164,000	(h)164,000
Braeburn Alloy Steel Corp.	....	.....	....	.....	2	20,730	20,730
Byers Company, A. M.	....	.....	....	.....	2	75,000	75,000
Cabot Shops, Inc.	....	.....	....	.....	1	12,000	12,000
Cameron Iron Works, Inc.	....	.....	....	.....	2	58,800	58,800
Carpenter Steel Company	....	.....	....	.....	7	85,800	85,800
Colorado Fuel & Iron Corp.	27	2,231,570	....	.....	....	.....	2,231,570
Roebling's Sons Corp., J. A.	9	235,000	....	.....	....	.....	235,000
TOTAL	36	2,466,570	....	.....	....	.....	2,466,570

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Companies (Continued):							
National Supply Co.	....	.....	....	.....	3	50,200	50,200
(g) Newport News Shipbuilding & Dry Dock Co.	....	.....	....	.....	3	12,000	12,000
Northwest Steel Rolling Mills, Inc.	....	.....	....	.....	2	42,000	42,000
Northwestern Steel & Wire Co.	....	.....	....	.....	5	835,000	835,000
Oregon Steel Mills	....	.....	....	.....	3	110,000	110,000
Pacific States Steel Corp.	3	181,770	....	.....	....	.....	181,770
Pittsburgh Steel Co.	12	1,404,000	....	.....	....	.....	1,404,000
Porter, Co. Inc., H. K.: Connors Steel Div.	....	.....	....	.....	3	67,500	67,500
Republic Steel Corp.	78	8,322,000	2	665,000	28	1,375,000	10,362,000
Rotary Electric Steel Co.	....	.....	....	.....	6	425,000	425,000
Sharon Steel Corp.	17	1,478,000	....	.....	2	72,000	1,550,000
Simonds Saw & Steel Co.	....	.....	....	.....	3	21,600	21,600
(g) Southwest Steel Rolling Mills	....	.....	....	.....	1	45,000	45,000
Stanley Works	3	188,280	....	.....	....	.....	188,280
Texas Steel Company	....	.....	....	.....	2	36,000	36,000
Timken Roller Bearing Company	....	.....	....	.....	9	648,000	648,000
Union Electric Steel Corp.	....	.....	....	.....	2	36,760	36,760
United States Steel Corp.:							
United States Steel Corp. (Central Operations)	183	24,664,000	(c) 8	1,284,000	9	357,000	26,305,000
American Steel & Wire Div.	26	2,275,000	....	.....	....	.....	2,275,000
Columbia-Geneva Steel Div.	19	2,482,000	....	.....	1	12,000	2,494,000
National Tube Div.	15	2,700,000	6	1,110,000	....	.....	3,810,000
Tennessee Coal & Iron Div.	23	3,831,000	(b) 3	.....	....	.....	3,831,000
TOTAL	266	35,952,000	17	2,394,000	10	369,000	38,715,000
Universal-Cyclops Steel Corporation	....	.....	....	.....	5	70,160	70,160
Vanadium-Alloys Steel Co.	....	.....	....	.....	4	11,910	11,910
Colonial Steel Co.	....	.....	....	.....	2	30,000	30,000
TOTAL	....	.....	....	.....	6	41,910	41,910
Vulcan Crucible Steel Co.	....	.....	....	.....	2	9,600	9,600
Washburn Wire Co.	4	93,000	....	.....	....	.....	93,000
West Virginia Steel & Mfg. Co.	....	.....	....	.....	1	68,000	68,000
Wheeling Steel Corp.	11	1,560,000	2	570,000	....	.....	2,130,000
Wickwire Brothers, Inc.	....	.....	....	.....	1	19,830	19,830
Youngstown Sheet and Tube Company	41	5,260,000	2	240,000	....	.....	5,500,000
GRAND TOTAL	933	109,094,730	(d) 33	4,787,000	(e) 260	10,448,680	124,330,410

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Columbia Tool Steel Co.	....	.....	....	.....	2	6,600	6,600
Continental Steel Corp.	5	394,000	....	.....	....	.....	394,000
Copperweld Steel Co.	....	.....	....	.....	7	618,380	618,380
Crucible Steel Company of America	9	972,000	....	.....	17	379,400	1,351,400
Damascus Tube Co.	....	.....	....	.....	3	1,800	1,800
Detroit Steel Corp.	14	1,290,000	....	.....	....	.....	1,290,000
Disston & Sons, Inc., Henry	....	.....	....	.....	2	25,000	25,000
Eastern Stainless Steel Corp.	....	.....	....	.....	3	32,000	32,000
Edgewater Steel Co.	3	89,890	....	.....	....	.....	89,890
Empire Steel Corporation	7	455,000	....	.....	....	.....	455,000
Erie Forge & Steel Corp.	5	234,000	....	.....	....	.....	234,000
Finkl & Sons Co., A.	....	.....	....	.....	2	33,600	33,600
Firth Sterling Inc.	....	.....	....	.....	3	20,040	20,040
Ford Motor Company	10	1,531,000	....	.....	5	224,000	1,755,000
Granite City Steel Co.	16	1,290,000	....	.....	....	.....	1,290,000
Green River Steel Corp.	....	.....	....	.....	2	241,920	241,920
Harrisburg Steel Corp.	3	100,750	....	.....	....	.....	100,750
Heppenstall Company	2	50,470	....	.....	1	5,080	55,550
Hoster Steel Corporation	....	.....	....	.....	1	16,920	16,920
Inland Steel Company	40	4,700,000	....	.....	....	.....	4,700,000
International Harvester Company	11	1,000,000	....	.....	....	.....	1,000,000
Isaacson Iron Works	....	.....	....	.....	2	102,000	102,000
Jessop Steel Company	....	.....	....	.....	4	33,490	33,490
Jones & Laughlin Steel Corporation	37	5,583,000	3	582,000	1	1,500	6,166,500
Joslyn Mfg. & Supply Co.	....	.....	....	.....	3	37,500	37,500
Judson Steel Corporation	3	76,500	....	.....	....	.....	76,500
Kaiser Steel Corp.	9	1,536,000	....	.....	....	.....	1,536,000
Keystone Steel & Wire Co.	4	425,000	....	.....	....	.....	425,000
Kilby Steel Company	....	.....	....	.....	1	34,020	34,020
Knoxville Iron Company	....	.....	....	.....	2	38,000	38,000
Laclede Steel Company	4	440,000	....	.....	....	.....	440,000
Latrobe Steel Company	....	.....	....	.....	5	24,000	24,000
Le Tourneau, Inc., R. G.	....	.....	....	.....	3	83,100	83,100
Lone Star Steel Co.	4	550,000	....	.....	....	.....	550,000
Lukens Steel Company	12	750,000	....	.....	....	.....	750,000
McLouth Steel Corporation	....	.....	....	.....	6	967,780	967,780
Merritt-Chapman & Scott Corp.							
Milton Steel Prod. Div.	....	.....	....	.....	2	43,000	43,000
Newport Steel Corp.	7	375,300	....	.....	3	333,200	708,500
TOTAL	7	375,300	....	.....	5	376,200	751,500
Mesta Machine Company	4	85,000	....	.....	1	20,000	105,000
Midvale Company	4	180,600	....	.....	7	172,770	353,370
National Forge & Ordnance Company	....	.....	....	.....	3	25,000	25,000
National Steel Corp.							
Great Lakes Steel Corp.	17	3,400,000	(b) 2	.....	....	.....	3,400,000
Weirton Steel Co.	13	2,600,000	(b) 2	.....	....	.....	2,600,000
TOTAL	30	6,000,000	(b) 4	.....	....	.....	6,000,000

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Plant Location and Operating Company:							
Alabama (Southern District)							
Anniston							
Kilby Steel Co.	....	.....	....	.....	1	34,020	34,020
Birmingham							
Porter Co. Inc., H. K.: Connors Steel Div.	....	.....	....	.....	3	67,500	67,500
Ensley							
Tennessee Coal & Iron Division	9	1,745,000	(b) 3	.....	....	.....	1,745,000
Fairfield							
Tennessee Coal & Iron Division	14	2,086,000	....	.....	....	.....	2,086,000
Gadsden							
Republic Steel Corp.	8	789,000	....	.....	....	.....	789,000
TOTAL	31	4,620,000	(b) 3	.....	4	101,520	4,721,520
California (Western District)							
Emeryville							
Judson Steel Corp.	3	76,500	....	.....	....	.....	76,500
Fontana							
Kaiser Steel Corp.	9	1,536,000	....	.....	....	.....	1,536,000
Los Angeles							
Bethlehem Pacific Coast Steel Corp.	....	.....	....	.....	3	402,000	402,000
Southwest Steel Rolling Mills	....	.....	....	.....	1	45,000	45,000
Niles							
Pacific States Steel Corp.	3	181,770	....	.....	....	.....	181,770
Pittsburg							
Columbia-Geneva Steel Div.	5	391,000	....	.....	....	.....	391,000
South San Francisco							
Bethlehem Pacific Coast Steel Corp.	5	252,000	....	.....	....	.....	252,000
Torrance							
Columbia-Geneva Steel Div.	4	212,000	....	.....	1	12,000	224,000
National Supply Co.	....	.....	....	.....	3	50,200	50,200
TOTAL	29	2,649,270	....	.....	8	509,200	3,158,470
Colorado (Western District)							
Pueblo							
Colorado Fuel and Iron Corp.	16	1,485,000	....	.....	....	.....	1,485,000
Connecticut (Eastern District)							
Bridgeport							
Stanley Works	3	188,280	....	.....	....	.....	188,280

STEEL CAPACITY (Ingots and Steel for Castings) Jan. 1, 1954

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Delaware (Eastern District)							
Claymont							
Colorado Fuel & Iron Corp.	1	494,570					494,570
Georgia (Southern District)							
Atlanta							
Atlantic Steel Co.	3	188,000			1	112,000	300,000
Illinois (Chicago District)							
Alton							
Laclede Steel Co.	4	440,000					440,000
Chicago							
Pistel & Sons Co., A.					2	33,600	33,600
Borg-Warner Corp.					2	(b)100,000	(b)100,000
Chicago Heights							
American Locomotive Co.	1	78,000					78,000
Columbia Tool Steel Co.					2	6,000	6,000
Granite City							
Granite City Steel Co.	16	1,290,000					1,290,000
Peoria							
Keystone Steel & Wire Co.	4	425,000					425,000
South Chicago							
International Harvester Company	11	1,000,000					1,000,000
Republic Steel Corp.	4	582,000			9	799,000	1,381,000
United States Steel Corp. (Central Operations)	31	4,779,000	3	500,000	3	191,000	5,470,000
Sterling							
Northwestern Steel & Wire Company					5	825,000	825,000
TOTAL	73	8,544,000	3	500,000	31	1,756,200	10,800,200
Indiana (Chicago District)							
East Chicago							
Youngstown Sheet and Tube Company	17	2,656,000					2,656,000
Fort Wayne							
Jodyn Mfg. & Supply Company					3	37,500	37,500
Gary							
United States Steel Corp. (Central Operations)	55	7,317,000	(c) 3				7,317,000
Indiana Harbor							
Inland Steel Company	40	4,700,000					4,700,000
Kokomo							
Continental Steel Corp.	5	394,000					394,000
New Castle							
Borg-Warner Corp.					4	64,000	64,000
TOTAL	117	14,867,000	(c) 3		7	101,500	14,968,500
Kentucky (Pittsburgh - Youngstown District)							
Ashland							
Armco Steel Corporation	8	870,000					870,000
Newport							
Merritt-Chapman & Scott Corp.							
Newport Steel Corp.	7	375,300			3	333,200	708,500
Owensboro							
Green River Steel Corp.					2	241,920	241,920
TOTAL	15	1,245,300			5	575,120	1,820,420

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
New York (Eastern District)							
Buffalo							
Republic Steel Corp.	9	882,000					882,000
Cortland							
Wickwire Brothers, Inc.					1	19,830	19,830
Dunkirk							
Allegheny Ludlum Steel Corporation					3	33,000	33,000
Lackawanna							
Bethlehem Steel Co.	34	5,000,000					5,000,000
Lockport							
Simonds Saw & Steel Co.					3	21,600	21,600
Syracuse							
Crucible Steel Company of America					6	39,600	39,600
Tonawanda							
Allegheny Ludlum Steel Corporation					1	4,500	4,500
Colorado Fuel & Iron Corp.	4	252,000					252,000
Watervliet							
Allegheny Ludlum Steel Corporation					7	77,000	77,000
TOTAL	47	6,134,000			23	215,530	6,349,530
Ohio (Pittsburgh - Youngstown District)							
Campbell							
Youngstown Sheet and Tube Company	12	1,422,000	2	240,000			1,662,000
Canton							
Industrial Forge & Steel, Inc.	2	48,500					48,500
Republic Steel Corp.	6	450,000			17	675,000	1,125,000
Timken Roller Bearing Co.					9	648,000	648,000
Cincinnati							
American Compressed Steel Corp.					1	(f) 21,600	(f) 21,600
Lowellville							
Sharon Steel Corp.	5	478,000			2	72,000	550,000
Mansfield							
Empire Steel Corp.	7	455,000					455,000
Massillon							
Republic Steel Corp.	9	630,000					630,000
Middletown							
Armco Steel Corp.	11	1,463,000			2	234,000	1,697,000
Portsmouth							
Detroit Steel Corp.	14	1,290,000					1,290,000
Steubenville							
Wheeling Steel Corp.	11	1,560,000	2	570,000			2,130,000
Toronto							
Louis Berkman Co., Ohio River Steel Div.	4	136,080					136,080

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Maryland (Eastern District)							
Baltimore							
Armco Steel Corporation					6	102,000	102,000
Eastern Stainless Steel Corp.					3	32,000	32,000
Sparrows Point							
Bethlehem Steel Co.	28	5,414,000	3	336,000			5,750,000
TOTAL	28	5,414,000	3	336,000	9	134,000	5,884,000
Massachusetts (Eastern District)							
Worcester							
American Steel & Wire Division	4	287,000					287,000
Michigan (Cleveland - Detroit District)							
Dearborn							
Ford Motor Company	10	1,531,000			5	224,000	1,755,000
Detroit							
Rotary Electric Steel Company					6	425,000	425,000
Ecorse							
Great Lakes Steel Corp.	17	3,400,000	(b) 2				3,400,000
Ferndale							
Allegheny Ludlum Steel Corporation					5	3,000	3,000
Trenton							
McLouth Steel Corp.					6	967,780	967,780
TOTAL	27	4,931,000	(b) 2		22	1,619,780	6,550,780
Minnesota (Chicago District)							
Duluth							
American Steel & Wire Division	9	973,000					973,000
Missouri (Chicago District)							
Kansas City							
Sheffield Steel Corp.	5	480,000			1	150,000	630,000
New Jersey (Eastern District)							
Harrison							
Crucible Steel Company of America					6	7,800	7,800
Roebling							
Roebling's Sons Corp., J. A.	9	235,000					235,000
TOTAL	9	235,000			6	7,800	242,800

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Ohio (Pittsburgh - Youngstown District)							
Warren							
Copperweld Steel Co.					7	618,380	618,380
Republic Steel Corp.	8	900,000					900,000
Youngstown							
Republic Steel Corp.	15	1,477,000	2	665,000			2,142,000
United States Steel Corp. (Central Operations)	15	2,159,000	2	784,000			2,943,000
Youngstown Sheet and Tube Co.	12	1,182,000					1,182,000
SubTotal (Pitts. - Youngs. Dist.)	131	13,640,680	8	2,259,000	37	2,247,380	18,147,060
Ohio (Cleveland - Detroit District)							
Cleveland							
Jones & Laughlin Steel Corp.	11	1,305,000					1,305,000
Republic Steel Corp.	19	2,572,000					2,572,000
Lorain							
National Tube Div.	12	1,494,000	3	870,000			2,364,000
SubTotal (Clev.-Det. Dist.)	42	5,371,000	3	870,000			6,241,000
TOTAL—Ohio	173	19,011,680	11	3,129,000	37	2,247,380	24,388,060
Oklahoma (Southern District)							
Oklahoma City							
Hooter Steel Corp.					1	16,920	16,920
Sand Springs							
Sheffield Steel Corp.	1	54,000					54,000
TOTAL	1	54,000			1	16,920	70,920
Oregon (Western District)							
Portland							
Oregon Steel Mills					3	110,000	110,000
Pennsylvania (Pittsburgh - Youngstown District)							
Aliquippa							
Jones & Laughlin Steel Corp.	5	1,182,000	3	582,000			1,764,000
Vulcan Crucible Steel Co.					2	9,600	9,600
Beaver Falls							
Babcock & Wilcox Co.					4	229,450	229,450
Brackenridge							
Allegheny Ludlum Steel Corp.	5	240,000			13	506,700	746,700
Braddock							
United States Steel Corp. (Central Operations)	16	2,179,000					2,179,000
Braeburn							
BraeburnAlloy Steel Corp.					2	20,730	20,730
Bridgeville							
Universal-Cyclops Steel Corp.					5	70,160	70,160
Butler							
Armco Steel Corporation	6	429,000			1	70,000	499,000

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Carnegie							
Union Electric Steel Corporation	....	.....	....	.....	2	26,760	26,760
Clairton							
United States Steel Corp. (Central Operations)	12	1,064,000	....	.....	....	.....	1,064,000
Donora							
American Steel & Wire Division	13	1,015,000	....	.....	....	.....	1,015,000
Duquesne							
United States Steel Corp. (Central Operations)	12	1,302,000	....	.....	4	160,000	1,462,000
Farrell							
Sharon Steel Corp.	12	1,000,000	....	.....	....	.....	1,000,000
Greenville							
Damascus Tube Co.	....	.....	....	.....	3	1,800	1,800
Harmony Township							
Byers Company, A. M.	....	.....	....	.....	2	75,000	75,000
Latrobe							
American Locomotive Company	3	103,000	....	.....	....	.....	103,000
Latrobe Steel Company	....	.....	....	.....	5	24,000	24,000
Vanadium-Alloys Steel Company	....	.....	....	.....	4	11,910	11,910
McKeesport							
Firth Sterling Inc.	....	.....	....	.....	3	20,040	20,040
National Tube Div.	3	1,306,000	3	240,000	....	.....	1,446,000
Midland							
Crucible Steel Company of America	9	972,000	....	.....	5	312,000	1,284,000
Monaca							
Colonial Steel Co.	....	.....	....	.....	2	30,000	30,000
Monessen							
Pittsburgh Steel Co.	12	1,404,000	....	.....	....	.....	1,404,000
Munhall							
United States Steel Corp. (Central Operations)	25	3,570,000	....	.....	....	.....	3,570,000
Oakmont							
Edgewater Steel Co.	3	89,890	....	.....	....	.....	89,890
Pittsburgh							
Heppenstall Company	2	50,470	....	.....	1	5,080	55,550
Jones & Laughlin Steel Corporation	21	3,096,000	....	.....	1	1,500	3,097,500
Vandergrift							
United States Steel Corp. (Central Operations)	6	275,000	....	.....	....	.....	275,000
Washington							
Jessop Steel Company	....	.....	....	.....	4	33,490	33,490
West Homestead							
Mesta Machine Co.	4	85,000	....	.....	1	20,000	105,000
SubTotal (Pitts. - Youngs. Dist)	169	19,262,360	6	822,000	64	1,628,220	21,712,580

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Texas (Southern District) (Continued)							
Houston							
Cameron Iron Works, Inc.	....	.....	....	.....	2	58,800	58,800
Sheffield Steel Corporation	8	900,000	....	.....	1	150,000	1,050,000
Lone Star							
Lone Star Steel Company	4	550,000	....	.....	....	.....	550,000
Longview							
Le Tourneau, Inc., R. G.	....	.....	....	.....	3	83,100	83,100
Pampa							
Cabot Shops, Inc.	....	.....	....	.....	1	12,000	12,000
TOTAL	12	1,450,000	....	.....	9	339,900	1,789,900
Utah (Western District)							
Geneva							
Columbia-Geneva Steel Div.	10	1,879,000	....	.....	....	.....	1,879,000
Virginia (Southern District)							
Newport News							
Newport News Shipbuilding & Dry Dock Company	....	.....	....	.....	3	12,000	12,000
Washington (Western District)							
Seattle							
Bethlehem Pacific Coast Steel Corp.	5	246,000	....	.....	....	.....	246,000
Isaacson Iron Works	....	.....	....	.....	2	102,000	102,000
Northwest Steel Rolling Mills, Inc.	....	.....	....	.....	2	42,000	42,000
TOTAL	5	246,000	....	.....	4	144,000	390,000
West Virginia (Pittsburgh - Youngstown District)							
Huntington							
West Virginia Steel & Mfg. Co.	....	.....	....	.....	1	68,000	68,000
Weirton							
Weirton Steel Co.	13	2,600,000 (b)	2	.....	....	.....	2,600,000
TOTAL	13	2,600,000 (b)	2	.....	1	68,000	2,668,000
DISTRIBUTION BY DISTRICTS:							
Eastern	225	24,609,120	3	336,000	62	918,940	25,864,060
Pittsburgh-Youngstown	339	36,748,340	16	3,081,000	108	4,518,720	44,348,060
Cleveland-Detroit	69	10,302,000	5	870,000	22	1,619,780	12,791,780
Chicago	204	24,864,000	6	500,000	29	2,007,700	27,371,700
Southern	47	6,312,000 (b)	3	.....	20	620,340	6,932,340
Western	60	6,259,270	....	.....	15	763,200	7,022,470
TOTAL	933	109,094,730 (d)	33	4,787,000 (e)	260	10,448,680	124,330,410

(a) Crucible furnace.
(b) Used in melting charge for open hearth furnaces.
(c) Includes 3 converters used only in melting charge for open hearth furnaces.
(d) Includes 10 converters used only in melting charge for open hearth furnaces.
(e) Includes 1 crucible furnace, annual capacity, 40 tons.
(f) Idle plant, capacity not included in total.
(g) Not described in this Directory.
(h) Two electric furnaces at Chicago, Ill., idle, (100,000 ton capacity) not included in total.

	OPEN HEARTH		BESSEMER		ELECTRIC AND CRUCIBLE		Total annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Pennsylvania (Continued) (Eastern District)							
Bethlehem							
Bethlehem Steel Co.	31	3,056,000	....	.....	4	158,000	3,214,000
Burnham							
Baldwin-Lima-Hamilton Corp.	5	169,920	....	.....	(a) 1	40	169,960
Coatesville							
Lukens Steel Company	12	750,000	....	.....	....	.....	750,000
Erie							
Erie Forge & Steel Corp.		234,000	....	.....	....	.....	234,000
Fairless Hills							
United States Steel Corp. (Central Operations)	5 9	2,200,000	....	.....	....	.....	2,200,000
Harrisburg							
Central Iron & Steel Co.	5	100,750	....	.....	1	46,000	406,000
Harrisburg Steel Corp.	3	360,000	....	.....	....	.....	100,750
Irvine							
National Forge & Ordnance Company	....	.....	....	.....	3	25,000	25,000
Ivy Rock							
Alan Wood Steel Co.	8	625,000	....	.....	....	.....	625,000
Johnstown							
Bethlehem Steel Co.	21	2,280,000	....	.....	....	.....	2,280,000
United States Steel Corp. (Central Operations)	2	19,000	....	.....	2	6,000	25,000
Milton							
Milton Steel Products Div. Merritt - Chapman & Scott Corp.	....	.....	....	.....	2	43,000	43,000
Philadelphia							
Disston & Sons, Inc., Henry	....	.....	....	.....	2	25,000	25,000
Midvale Company	4	180,600	....	.....	7	172,770	353,370
Phoenixville							
Phoenix Iron & Steel Co.	6	432,000	....	.....	....	.....	432,000
Reading							
Carpenter Steel Co.	....	.....	....	.....	7	85,800	85,800
Steelton							
Bethlehem Steel Co.	12	1,356,000	....	.....	....	.....	1,356,000
SubTotal (Eastern Dist.)	123	11,763,270	....	.....	29	561,610	12,324,880
TOTAL—Pennsylvania	292	31,025,630	6	822,000	(e) 93	2,189,830	34,037,460
Rhode Island (Eastern District)							
Phillipsdale							
Washburn Wire Co.	4	93,000	....	.....	....	.....	93,000
Tennessee (Southern District)							
Knoxville							
Knoxville Iron Co.	....	.....	....	.....	2	38,000	38,000
Texas (Southern District)							
Fort Worth							
Texas Steel Company	....	.....	....	.....	2	36,000	36,000

TREND IN STEEL INGOT CAPACITY

(Net Tons)

As of Jan. 1	Open Hearth	Bessemer	Crucible	Electric	Total
1954	109,094,730	4,787,000	40	10,448,640	124,330,410
1953	102,677,980	4,637,000	40	10,232,450	117,547,470
1952	94,973,780	5,381,000	40	8,232,850	108,587,670
1951	91,310,850	5,621,000	20	7,570,810	104,502,680
1950	86,984,490	5,537,000	20	6,871,290	99,392,800
1949	84,817,040	5,191,000	20	6,112,870	96,120,930
1948	83,610,690	5,226,000	20	5,396,750	94,233,460
1947	81,010,990	5,154,000	20	5,076,240	91,241,250
1946	81,236,250	5,154,000	20	5,500,290	91,890,560
1945	84,171,590	5,874,000	3,800	5,455,890	95,505,280
1944	82,223,610	6,074,000	3,800	5,350,880	93,652,290
1943	79,180,880	6,553,000	3,800	4,554,980	90,292,660
1942	78,107,260	6,721,400	3,800	3,737,510	88,569,970
1941	74,565,510	6,996,520	3,942	2,586,320	84,152,292
1940	73,721,592	6,069,920	5,354	1,882,630	81,619,496
1939	72,959,638	7,138,880	5,354	1,725,086	81,828,958
1938	71,472,370	7,212,800	9,610	1,490,858	80,185,638
1937	69,725,736	7,084,000	11,850	1,326,788	78,148,374
1936	68,946,829	8,058,400	11,850	1,147,221	78,164,300
1935	68,544,310	8,842,400	11,850	1,053,370	78,451,930

TEN LARGEST CAPACITIES STEEL FOR INGOTS AND CASTINGS

(Net Tons)

	Jan. 1, 1954	Jan. 1, 1951	Jan. 1, 1948
United States Steel Corp.	38,715,000	33,868,700	31,226,200
Bethlehem Steel Corp.	18,500,000	16,000,000	13,800,000
Republic Steel Corp.	10,262,000	8,967,000	8,600,000
Jones & Laughlin Steel Corp.	6,166,500	4,846,500	4,741,500
National Steel Corp.	6,000,000	4,750,000	4,060,000
Armco Steel Corp.	4,902,000	4,330,000	3,367,000
Youngstown Sheet & Tube Co.	5,500,000	4,250,000	4,002,000
Inland Steel Co.	4,700,000	3,750,000	3,400,000
Colorado Fuel & Iron Corp.	2,466,570	2,028,000	1,452,000
Wheeling Steel Corp.	2,130,000	1,860,000	1,409,000

Blast Furnaces . . .

ANNUAL CAPACITY OF BLAST FURNACES as of Jan. 1, 1954

	No. of stacks	Total annual capacity (N. T.)
Companies:		
Alan Wood Steel Company	2	454,800
Armco Steel Corporation	6	1,828,000
Sheffield Steel Corporation	1	360,000
TOTAL	7	2,188,000
Barium Steel Corporation:		
Chester Blast Furnace, Inc.	1	200,000
Berkman Company, Louis	1	136,800
Bethlehem Steel Company	33	(a) 12,400,000
Colorado Fuel and Iron Corporation	7	1,423,760
Crucible Steel Company of America	3	895,000
Detroit Steel Corporation	2	768,700
Eastern Gas and Fuel Associates	1	191,100
Ford Motor Company	3	1,120,000
Globe Iron Company	1	100,000
Granite City Steel Co.	2	450,000
Inland Steel Company	8	2,638,950
Interlake Iron Corporation	6	1,540,130
International Harvester Company	3	731,000
Jackson Iron & Steel Company	1	95,000
Jones & Laughlin Steel Corporation	13	4,467,000
Kaiser Steel Corporation	3	1,314,000
Lavino & Company, E. J.	2	(b) 112,000
Lone Star Steel Company	1	385,000
National Steel Corporation:		
Great Lakes Steel Corporation	4	1,680,000
Hanna Furnace Corporation	4	850,000
Weirton Steel Company	4	2,000,000
TOTAL	12	4,530,000
New Jersey Zinc Company	2	(c) 112,000
Pittsburgh Coke & Chemical Company	3	836,500
Pittsburgh Steel Company	3	954,000
Republic Steel Corporation	22	7,220,000
Sharon Steel Corporation	3	709,630
Shenango Furnace Company	2	445,450
Tennessee Products & Chemical Corp.	3	217,740
Tonawanda Iron Division	1	171,000
United States Pipe & Foundry Co.	4	491,710
United States Steel Corporation:		
United States Steel Corp. (Central Operations)	53	(d) 18,702,200
American Steel & Wire Division	6	1,429,400
Columbia-Geneva Steel Division	5	1,682,700
National Tube Division	9	3,122,800
Tennessee Coal & Iron Division	9	(e) 3,063,000
TOTAL	82	(f) 28,000,100
Wheeling Steel Corporation	6	1,800,000
Woodward Iron Company	4	772,630
Youngstown Sheet & Tube Company	13	4,129,400
GRAND TOTAL	260	(g) 82,001,390
Plant Location and Operating Company:		
Alabama (Southern District)		
Birmingham		
Republic Steel Corporation	2	402,000
United States Pipe & Foundry Co.	2	281,230
Ensley		
Tennessee Coal & Iron Division	6	(e) 1,844,300
Fairfield		
Tennessee Coal & Iron Division	3	1,218,700
Gadsden		
Republic Steel Corporation	2	525,000
North Birmingham		
United States Pipe & Foundry Co.	2	210,480
Woodward		
Woodward Iron Company	4	772,630
TOTAL	21	(e) 5,254,340
California (Western District)		
Fontana		
Kaiser Steel Corporation	3	1,314,000
Colorado (Western District)		
Pueblo		
Colorado Fuel and Iron Corporation	4	883,560
Illinois (Chicago District)		
Chicago		
Interlake Iron Corporation	2	586,630
Granite City		
Granite City Steel Co.	2	450,000
South Chicago		
International Harvester Company	3	731,000
Republic Steel Corporation	1	455,000
United States Steel Corp. (Central Operations)	11	4,196,700
Youngstown Sheet and Tube Company	3	684,000
TOTAL	22	7,103,330

(a) Includes 216,000 tons ferroalloys capacity.
(b) Ferromanganese only.
(c) Spiegeleisen only.
(d) Includes 322,800 tons ferroalloys capacity.
(e) Includes 35,000 tons ferroalloys capacity.
(f) Includes 357,800 tons ferroalloys capacity.
(g) Includes 797,800 tons ferroalloys capacity.

	No. of stacks	Total annual capacity (N. T.)
Indiana (Chicago District)		
East Chicago		
Youngstown Sheet and Tube Company	3	1,292,600
Gary		
United States Steel Corp. (Central Operations)	12	4,755,400
Indiana Harbor		
Inland Steel Company	8	2,638,950
TOTAL	23	8,686,950
Kentucky (Pittsburgh - Youngstown District)		
Ashland		
Armco Steel Corporation	3	802,000
Maryland (Eastern District)		
Sparrows Point		
Bethlehem Steel Company	9	4,116,000
Massachusetts (Eastern District)		
Everett		
Eastern Gas and Fuel Associates	1	191,100
Michigan (Cleveland - Detroit District)		
Dearborn		
Ford Motor Company	3	1,120,000
River Rouge		
Great Lakes Steel Corporation	4	1,680,000
TOTAL	7	2,800,000
Minnesota (Chicago District)		
Duluth		
American Steel & Wire Division	2	449,400
Interlake Iron Corporation	1	131,580
TOTAL	3	580,980
New York (Eastern District)		
Buffalo		
Hanna Furnace Corporation	4	850,000
Republic Steel Corporation	2	618,000
Lackawanna		
Bethlehem Steel Company	7	3,036,000
North Tonawanda		
Tonawanda Iron Division	1	171,000
Tonawanda		
Colorado Fuel & Iron Corporation	2	390,000
Troy		
Republic Steel Corporation	1	263,000
TOTAL	17	5,328,000
Ohio (Pittsburgh - Youngstown District)		
Campbell		
Youngstown Sheet and Tube Company	4	1,450,800
Canton		
Republic Steel Corporation	1	235,000
Hubbard		
Youngstown Sheet and Tube Company	1	200,400
Jackson		
Globe Iron Company	1	100,000
Jackson Iron & Steel Company	1	95,000
Lowellville		
Sharon Steel Corporation	1	148,630
Martins Ferry		
Louis Berkman Company	1	136,800
Massillon		
Republic Steel Corporation	1	238,000
Middletown		
Armco Steel Corporation	1	502,000
New Miami		
Armco Steel Corporation	2	524,000
Portsmouth		
Detroit Steel Corporation	2	768,700
Steubenville		
Wheeling Steel Corporation	5	1,554,000
Struthers		
Pittsburgh Coke & Chemical Company	1	182,500
Warren		
Republic Steel Corporation	1	516,000
Youngstown		
Republic Steel Corporation	5	1,717,000
United States Steel Corp. (Central Operations)	6	2,003,700
Youngstown Sheet and Tube Company	2	501,600
SubTotal (Pitts. - Youngs. Dist.)	36	10,874,120
Ohio (Cleveland - Detroit District)		
Cleveland		
American Steel & Wire Division	2	530,000
Jones & Laughlin Steel Corporation	2	740,000
Republic Steel Corporation	6	2,251,000
Lorain		
National Tube Division	5	1,843,500
Toledo		
Interlake Iron Corporation	2	551,180
SubTotal (Clev. - Det. Dist.)	17	5,914,680
TOTAL—Ohio	53	16,788,800
Pennsylvania (Pittsburgh - Youngstown District)		
Aliquippa		
Jones & Laughlin Steel Corporation	5	1,800,000
Braddock		
United States Steel Corp. (Central Operations)	7	2,602,700

	No. of stacks	Total annual capacity (N. T.)
Pennsylvania (Pittsburgh - Youngstown District) (Continued):		
Clairton		
United States Steel Corp. (Central Operations)	3	(a) 614,000
Donora		
American Steel & Wire Division	2	450,000
Duquesne		
United States Steel Corp. (Central Operations)	6	(b) 1,363,700
Farrell		
Sharon Steel Corporation	2	561,000
McKeesport		
National Tube Division	4	1,380,300
Midland		
Crucible Steel Company of America	3	895,000
Monessen		
Pittsburgh Steel Company	3	954,000
Neville Island		
Pittsburgh Coke & Chemical Company	2	654,000
Pittsburgh		
Jones & Laughlin Steel Corporation	6	1,927,000
Rankin		
United States Steel Corp. (Central Operations)	6	2,133,000
Sharpsville		
Shenango Furnace Company	2	445,450
SubTotal (Pitts. - Youngs. Dist.)	51	15,579,150
Pennsylvania (Eastern District)		
Bethlehem		
Bethlehem Steel Company	7	2,708,000
Birdsboro		
Colorado Fuel and Iron Corporation	1	151,200
Chester		
Chester Blast Furnace, Inc.	1	200,000
Erie		
Interlake Iron Corporation	1	270,750
Fairless Hills		
United States Steel Corp. (Central Operations)	2	1,134,000
Johnstown		
Bethlehem Steel Company	7	(c) 1,664,000
Palmerton		
New Jersey Zinc Company	2	(d) 112,000
Sheridan		
Lavino and Company, E. J.	1	(e) 56,000
Steelton		
Bethlehem Steel Company	3	876,000
Swedeland		
Alan Wood Steel Company	2	454,800
SubTotal (Eastern Dist.)	27	7,626,750
TOTAL—Pennsylvania	78	(f) 23,205,900

(a) Includes 85,200 tons ferroalloys capacity.
(b) Includes 237,600 tons ferroalloys capacity.
(c) Includes 216,000 tons ferroalloys capacity.
(d) Spiegeleisen only.
(e) Ferromanganese only.
(f) Includes 706,800 tons ferroalloys capacity.

Tennessee (Southern District)		
Lyles-Wrigley		
Tennessee Products & Chemical Corp.	1	36,300
Rockwood		
Tennessee Products & Chemical Corp.	2	181,440
TOTAL	3	217,740
Texas (Southern District)		
Houston		
Sheffield Steel Corporation	1	360,000
Lone Star		
Lone Star Steel Company	1	385,000
TOTAL	2	745,000
Utah (Western District)		
Geneva		
Columbia-Geneva Steel Division	3	1,200,000
Ironton		
Columbia-Geneva Steel Division	2	482,700
TOTAL	5	1,682,700
Virginia (Southern District)		
Lynchburg		
Lavino and Company, E. J.	1	(a) 56,000
West Virginia (Pittsburgh - Youngstown District)		
Benwood		
Wheeling Steel Corporation	1	246,000
Weirton		
Weirton Steel Company	4	2,000,000
TOTAL	5	2,246,000
DISTRIBUTION BY DISTRICTS:		
Eastern	54	(b) 17,261,850
Pittsburgh-Youngstown	95	(c) 29,501,270
Cleveland-Detroit	24	8,714,680
Chicago	48	16,371,250
Southern	27	(d) 6,273,080
Western	12	3,879,260
TOTAL	260	(e) 82,001,390

(a) Ferromanganese only.
(b) Includes 384,000 tons ferroalloys capacity.
(c) Includes 322,800 tons ferroalloys capacity.
(d) Includes 91,000 tons ferroalloys capacity.
(e) Includes 797,800 tons ferroalloys capacity.

Coke

TO SUPPORT the increases in steelmaking capacity, the industry made comparable increases in blast furnace and coke capacity.

Coke capacity increased about 10 per cent to 73,239,540 net tons from 66,784,640 tons three years ago.

All the increase was in coal chemical recovery type ovens. This type capacity rose to 69,929,790 tons, compared with 62,922,890 tons in 1951. The number of ovens rose from 12,743 in 1951 to 13,937 in 1954.

Fewer Beehives—The less efficient beehive ovens declined both in numbers and capacity. Three years ago, there were 5540 beehive ovens with 3,861,750 tons capacity. This year's directory lists 4800 beehive ovens with 3,309,750 tons capacity.

All the beehive capacity is in two states, Pennsylvania and Utah. The drop is caused by the abandonment of 500 Utah units and 240 Pennsylvania ovens.

More Stacks—Blast furnace capacity rose nearly 13 per cent to 82,001,390 tons, including 797,800 tons of ferroalloy capacity. Three years ago blast furnace capacity was 72,553,460 net tons, including 1,098,400 tons of ferroalloy capacity. The increase is 9,447,930 tons.

Number of blast furnaces at the beginning of 1954 was 260, or 10 more than were listed in 1951.

As in steelmaking furnaces, the trend in blast furnaces is toward substantially larger units.

Average annual capacity of today's blast furnaces

ANNUAL COKE CAPACITY as of Jan. 1, 1954

	BEEHIVE		OTHER		Total annual capacity (N. T.)
	No. of ovens	Annual capacity (N. T.)	No. of ovens	Annual capacity (N. T.)	
Companies:					
Alan Wood Steel Company	.....	.....	151	600,000	600,000
Armco Steel Corporation	.....	.....	186	990,000	990,000
Sheffield Steel Corporation	.....	.....	62	318,000	318,000
TOTAL	.....	.....	248	1,308,000	1,308,000
Bethlehem Steel Company	.....	.....	2,208	11,330,000	11,330,000
Colorado Fuel and Iron Corporation	.....	.....	266	1,220,000	1,220,000
Crucible Steel Company of America	.....	.....	213	831,600	831,600
Detroit Steel Corporation	.....	.....	108	550,000	550,000
Eastern Gas and Fuel Associates	.....	.....	108	666,000	666,000
Ford Motor Company	.....	.....	220	1,372,650	1,372,650
Granite City Steel Co.	.....	.....	76	450,000	450,000
Inland Steel Company	.....	.....	418	2,143,400	2,143,400
Interlake Iron Corporation	.....	.....	390	1,494,000	1,494,000
International Harvester Company	.....	.....	148	664,300	664,300
Jones & Laughlin Steel Corporation	.....	.....	831	4,068,000	4,068,000
Kaiser Steel Corporation	297	100,000	225	1,006,000	1,106,000
Lone Star Steel Company	.....	.....	78	438,000	438,000
National Steel Corporation:					
Great Lakes Steel Corporation	.....	.....	216	1,600,000	1,600,000
Hanna Furnace Corporation	.....	.....	126	*661,500	*661,500
Weirton Coal Company	136	120,000	.....	.....	120,000
Weirton Steel Company	.....	.....	249	1,620,000	1,620,000
TOTAL	136	120,000	591	3,881,500	4,001,500
Pittsburgh Coke & Chemical Company	.....	.....	140	1,000,000	1,000,000
Pittsburgh Steel Company	574	426,000	74	500,000	926,000
Republic Steel Corporation	296	215,000	1,222	*6,663,500	*6,878,500
Sharon Steel Corporation	.....	.....	60	225,000	225,000
Carpentertown Coal & Coke Co.	585	375,000	.....	.....	375,000
TOTAL	585	375,000	60	225,000	600,000
Tennessee Products & Chemical Corp.	.....	.....	44	251,500	251,500
United States Pipe & Foundry Co.	.....	.....	150	800,000	800,000
United States Steel Corporation:					
United States Steel Corp. (Central Operations)	2,912	2,073,750	3,183	15,317,070	17,390,820
American Steel & Wire Division	.....	.....	295	1,332,670	1,332,670
Columbia-Geneva Steel Division	.....	.....	308	1,212,300	1,212,300
National Tube Division	.....	.....	385	1,766,750	1,766,750
Tennessee Coal & Iron Division	.....	.....	572	2,945,550	2,945,550
TOTAL	2,912	2,073,750	4,743	22,574,340	24,648,090
Wheeling Steel Corporation	.....	.....	314	1,720,000	1,720,000
Woodward Iron Company	.....	.....	256	938,000	938,000
Youngstown Sheet and Tube Company	.....	.....	655	3,234,000	3,234,000
GRAND TOTAL	4,800	3,309,750	13,937	69,929,790	73,239,540

* Includes 50% of coke capacity of the Donner-Hanna Coke Corporation, Buffalo, New York

	BEEHIVE		OTHER		Total annual capacity (N. T.)
	No. of ovens	Annual capacity (N. T.)	No. of ovens	Annual capacity (N. T.)	
Plant Location and Operating Company:					
Alabama (Southern District)					
Birmingham					
Republic Steel Corporation	.....	.....	65	375,000	375,000
Fairfield					
Tennessee Coal & Iron Division	.....	.....	572	2,945,550	2,945,550
Gadsden					
Republic Steel Corporation	.....	.....	102	565,000	565,000
North Birmingham					
United States Pipe & Foundry Co.	.....	.....	150	800,000	800,000
Woodward					
Woodward Iron Company	.....	.....	256	938,000	938,000
TOTAL	.....	.....	1,145	5,623,550	5,623,550
California (Western District)					
Fontana					
Kaiser Steel Corporation	.....	.....	225	1,006,000	1,006,000
Colorado (Western District)					
Pueblo					
Colorado Fuel and Iron Corporation	.....	.....	266	1,220,000	1,220,000
Illinois (Chicago District)					
Chicago					
Interlake Iron Corporation	.....	.....	120	398,600	398,600
Granite City					
Granite City Steel Company	.....	.....	76	450,000	450,000
Joliet					
United States Steel Corp. (Central Operations)	.....	.....	280	1,071,520	1,071,520
South Chicago					
International Harvester Company	.....	.....	148	664,300	664,300
Republic Steel Corporation	.....	.....	75	460,000	460,000
Youngstown Sheet and Tube Co.	.....	.....	70	414,000	414,000
TOTAL	.....	.....	769	3,458,420	3,458,420
Indiana (Chicago District)					
East Chicago					
Youngstown Sheet and Tube Co.	.....	.....	195	1,128,000	1,128,000
Gary					
United States Steel Corp. (Central Operations)	.....	.....	1,162	5,927,350	5,927,350
Indiana Harbor					
Inland Steel Company	.....	.....	418	2,143,400	2,143,400
TOTAL	.....	.....	1,775	9,198,750	9,198,750

COKE CAPACITY—Jan. 1, 1954

	BEEHIVE		OTHER		Total annual capacity (N. T.)
	No. of ovens	Annual capacity (N. T.)	No. of ovens	Annual capacity (N. T.)	
Maryland (Eastern District)					
Sparrows Point					
Bethlehem Steel Company	.....	.....	687	3,764,000	3,764,000
Massachusetts (Eastern District)					
Everett					
Eastern Gas and Fuel Associates	.....	.....	108	666,000	666,000
Michigan (Cleveland - Detroit District)					
Dearborn					
Ford Motor Company	.....	.....	220	1,372,650	1,372,650
River Rouge					
Great Lakes Steel Corporation	.....	.....	216	1,600,000	1,600,000
TOTAL	.....	.....	436	2,972,650	2,972,650
Minnesota (Chicago District)					
Duluth					
American Steel & Wire Division	.. ..	.....	115	498,000	498,000
Interlake Iron Corporation	.....	.....	61	310,000	310,000
TOTAL	.....	.....	176	808,000	808,900
New York (Eastern District)					
Buffalo					
*Donner-Hanna Coke Corporation	.....	.....	252	1,323,000	1,323,000
Lackawanna					
Bethlehem Steel Company	.....	.....	459	2,514,000	2,514,000
Troy					
Republic Steel Corporation	.....	.....	31	200,000	200,000
TOTAL	.....	.....	742	4,037,000	4,037,000
Ohio (Pittsburgh - Youngstown District)					
Campbell					
Youngstown Sheet and Tube Co.	.....	.....	306	1,320,000	1,320,000
Canton					
Republic Steel Corporation	.....	.....	62	240,000	240,000
Massillon					
Republic Steel Corporation	.....	.....	43	192,000	192,000
Middletown					
Armco Steel Corporation	.....	.....	76	425,000	425,000
New Miami					
Armco Steel Corporation	.....	.....	110	565,000	565,000
Portsmouth					
Detroit Steel Corporation	.....	.....	108	550,000	550,000
Warren					
Republic Steel Corporation	.....	.....	141	870,000	870,000
Youngstown					
Republic Steel Corporation	.....	.....	172	1,000,000	1,000,000
Youngstown Sheet and Tube Co.	.....	.....	84	372,000	372,000
SubTotal (Pitts. - Youngs. Dist.)	.....	.....	1,102	5,534,000	5,534,000

* Owned jointly by the Hanna Furnace Corporation and Republic Steel Corporation.

	BEEHIVE		OTHER		Total annual capacity (N. T.)
	No. of ovens	Annual capacity (N. T.)	No. of ovens	Annual capacity (N. T.)	
Tennessee (Southern District)					
Chattanooga					
Tennessee Products & Chemical Corp.	.....	.....	44	251,500	251,500
Texas (Southern District)					
Houston					
Sheffield Steel Corporation	.....	.....	62	318,000	318,000
Lone Star					
Lone Star Steel Company	.....	.....	78	438,000	438,000
TOTAL	.....	.....	140	756,000	756,000
Utah (Western District)					
Geneva					
Columbia-Geneva Steel Division	.....	.....	252	1,012,300	1,012,300
Ironton					
Columbia-Geneva Steel Division	.....	.....	56	200,000	200,000
Sunnyside					
Kaiser Steel Corporation	297	100,000	.....	.....	100,000
TOTAL	297	100,000	308	1,212,300	1,312,300
West Virginia (Pittsburgh - Youngstown District)					
East Steubenville					
Wheeling Steel Corporation	.....	.....	314	1,720,000	1,720,000
Fairmont					
Sharon Steel Corporation	.....	.....	60	225,000	225,000
Weirton					
Weirton Steel Company	.....	.....	249	1,620,000	1,620,000
TOTAL	.....	.....	623	3,565,000	3,565,000
DISTRIBUTION BY DISTRICTS:					
Eastern	.....	.....	2,982	15,261,100	15,261,100
Pittsburgh-Youngstown	4,503	3,209,750	4,450	22,581,800	25,791,550
Cleveland-Detroit	.....	.....	1,657	8,552,370	8,552,370
Chicago	.....	.....	2,720	13,465,170	13,465,170
Southern	.....	.....	1,329	6,631,050	6,631,050
Western	297	100,000	799	3,438,300	3,538,300
TOTAL	4,800	3,309,750	13,937	69,929,790	73,239,540

	BEEHIVE		OTHER		Total annual capacity (N. T.)
	No. of ovens	Annual capacity (N. T.)	No. of ovens	Annual capacity (N. T.)	
Ohio (Cont.) (Cleveland - Detroit District)					
Cleveland					
American Steel & Wire Division	.....	.....	180	834,670	834,670
Jones & Laughlin Steel Corporation	.....	.....	100	360,000	360,000
Republic Steel Corporation	.....	.....	405	2,100,000	2,100,000
Lorain					
National Tube Division	.....	.....	385	1,766,750	1,766,750
Toledo					
Interlake Iron Corporation	.....	.....	151	518,300	518,300
SubTotal (Clev. - Det. Dist.)	.....	.....	1,221	5,579,720	5,579,720
TOTAL—Ohio	.....	.....	2,323	11,113,720	11,113,720
Pennsylvania (Pittsburgh - Youngstown District)					
Aliquippa					
Jones & Laughlin Steel Corporation	.....	.....	352	2,190,000	2,190,000
Brownsville Junction					
Republic Steel Corporation	296	215,000	.....	.....	215,000
Clairton					
United States Steel Corp. (Central Operations)	.....	.....	1,567	7,443,200	7,443,200
Isabella					
Weirton Coal Company	136	120,000	.....	.....	120,000
Midland					
Crucible Steel Company of America	.....	.....	213	831,600	831,600
Monessen					
Pittsburgh Steel Company	574	426,000	74	500,000	926,000
Mount Pleasant					
Carpentertown Coal & Coke Co.	585	375,000	.....	.....	375,000
Neville Island					
Pittsburgh Coke & Chemical Co.	.....	.....	140	1,000,000	1,000,000
Pittsburgh					
Jones & Laughlin Steel Corporation	.....	.....	379	1,518,000	1,518,000
Various					
United States Steel Corp. (Central Operations)	2,912	2,073,750	.....	.....	2,073,750
SubTotal (Pitts. - Youngs. Dist.)	4,503	3,209,750	2,725	13,482,800	16,692,550
Pennsylvania (Eastern District)					
Bethlehem					
Bethlehem Steel Company	.....	.....	496	2,136,000	2,136,000
Erie					
Interlake Iron Corporation	.....	.....	58	267,100	267,100
Fairless Hills					
United States Steel Corp. (Central Operations)	.....	.....	174	875,000	875,000
Johnstown					
Bethlehem Steel Company	.....	.....	436	2,268,000	2,268,000
Steelton					
Bethlehem Steel Company	.....	.....	130	648,000	648,000
Swedeland					
Alan Wood Steel Company	.....	.....	151	600,000	600,000
SubTotal (Eastern Dist.)	.....	.....	1,445	6,794,100	6,794,100
TOTAL—Pennsylvania	4,503	3,209,750	4,170	20,276,900	23,486,650

is 315,390 tons. Back in 1926, we had 395 blast furnaces with total capacity of 57,288,437 tons, or an average annual capacity of 145,034 tons. Capacity per furnace has more than doubled in the intervening years.

Improvements—The increased capacity results from the fact that all new furnaces are large, that older furnaces have been rebuilt to boost their capacity and from improvement in furnace design, improvement in blowing equipment that has permitted higher rates of blowing and higher top pressures and various other improvements in practice.

TREND IN COKE CAPACITY
(Net Tons)

As of Jan. 1	By-product	Beehive	Total
1954	69,929,790	3,309,750	73,239,540
1953	67,379,440	3,801,750	71,181,190
1952	63,198,490	3,861,750	67,060,240
1951	62,922,890	3,861,750	66,784,640
1950	62,283,490	3,185,750	65,469,240
1949	61,572,750	3,345,750	64,918,500
1948	59,699,490	2,806,350	62,505,840
1947	57,774,240	2,560,350	60,280,590
1946	57,614,390	2,806,350	60,420,740
1945	57,409,690	3,446,350	60,856,040
1944	56,574,430	3,336,550	59,910,980
1943	51,707,830	5,756,400	57,464,230
1942	50,291,830	4,239,975	54,531,805

CANADIAN *Statistics*

Like its neighbor to the south, Canada can report steady growth. During the 1951-1954 period, its ingot capacity increased from 4,009,500 to 4,791,850 tons

CANADA'S steel industry enjoyed steady growth from 1951 to 1954. Its ingot capacity, like that of the United States, increased 19 per cent—going from 4,009,500 to 4,791,850 tons.

Increases for the 1951-1954 span go across the board: Coke capacity went from 2,736,400 to 3,388,000 tons; blast furnace capacity jumped from 2,883,950 to 3,563,300 tons; and total capacity for hot-rolled products grew from 3,416,800 to 3,909,010 tons.

Percentagewise, blast furnace capacity went up 23 per cent, coke capacity 22 per cent and hot-rolling capacity 14 per cent. Half of the latter increase in facilities was for producing hot-rolled sheets.

COKE (Canada)

	No. of ovens	Annual capacity (N. T.)
Algoma Steel Corporation, Limited	251	1,340,000
Dominion Foundries and Steel, Limited	35	222,000
Dominion Steel & Coal Corporation, Ltd.:		
Dominion Iron & Steel, Limited	114	675,000
Steel Company of Canada, Limited	191	1,151,000
TOTAL	591	3,388,000

Blast Furnaces (Canada)

	No. of stacks	Annual pig iron capacity (N. T.)
Algoma Steel Corporation, Limited	5	1,280,000
Canadian Furnace Co., Limited	2	211,800
Dominion Foundries and Steel, Limited	1	320,000
Dominion Steel & Coal Corporation, Ltd.:		
Dominion Iron & Steel, Limited	3	510,500
Steel Company of Canada, Limited	4	1,241,000
TOTAL	15	3,563,300

STEEL (Ingots and Steel for Castings) (Canada)

	OPEN HEARTH		BESSEMER		ELECTRIC		Total Annual capacity (N. T.)
	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	No.	Annual capacity (N. T.)	
Kinds:							
Open hearth—Basic	43	3,909,500	..	....	..	....	4,029,500
Bessemer	..	....	(a) 2	120,000	..	....	
Electric	..	....	..	....	25	762,350	762,350
TOTAL	43	3,909,500	(a) 2	120,000	25	762,350	4,791,850
Companies:							
Algoma Steel Corporation, Ltd.	14	1,120,000	(a) 2	120,000	..	....	1,240,000
Atlas Steels, Ltd.	..	....	..	....	9	200,200	200,200
Burlington Steel Company, Ltd.	..	....	..	....	1	22,000	22,000
Canadian Tube & Steel Products, Ltd.	..	....	..	....	2	82,800	82,800
Dominion Foundries and Steel Ltd.	4	243,500	..	....	5	184,000	427,500
Dominion Steel & Coal Corp., Ltd.:							
Dominion Iron & Steel Ltd.	10	702,000	..	....	1	32,000	734,000
Manitoba Rolling Mill Co., Ltd.	2	54,000	..	....	2	54,000	108,000
Sorel Industries, Ltd.	..	....	..	....	3	42,350	42,350
Steel Company of Canada, Ltd.	13	1,790,000	..	....	1	110,000	1,900,000
Western Canada Steel Ltd.:							
Vancouver Steel Co. Ltd.	..	....	..	....	1	35,000	35,000
TOTAL	43	3,909,500	(a) 2	120,000	25	762,350	4,791,850

(a) Used in melting charge for open hearth furnaces.

TOTAL HOT-ROLLED STEEL PRODUCTS (Canada)

	Annual capacity (N. T.)
Products:	
Rails—Standard, over 60 lbs. per yard	430,000
Rails—60 lbs. or less per yard	7,000
Long Joint or Splice Bars and Tie Plate Bars	90,200
Structural Shapes—Heavy	230,000
Structural Shapes—Light	201,240
Steel Piling (Rolled)	36,000
Plates—Sheared	186,000
Plates—Universal	76,000
Hot Rolled Sheets	559,000
Coils for Cold Reduced Black Plate and Tin Plate	448,000
Hot Rolled Strip	144,000
Bars—Other than Concrete Reinforcement	725,670
Bars—Concrete Reinforcement	199,000
Wire Rods	318,000
Skelp	60,000
Blooms and Billets for Forging	195,700
All Other Hot Rolled	3,200
TOTAL	3,909,010
Companies:	
Algoma Steel Corporation, Limited	962,000
Atlas Steels, Limited	126,000
Burlington Steel Company, Ltd.	51,000
Canadian Tube & Steel Products, Limited	172,000
Dominion Foundries and Steel, Limited	353,000
Dominion Steel & Coal Corporation, Ltd.:	
Dominion Iron & Steel, Limited	538,800
Enamel & Heating Products, Ltd.	10,000
Manitoba Rolling Mill Company, Limited	94,860
Sorel Industries, Limited	33,350
Steel Company of Canada, Limited	1,526,000
Vanadium Alloys Steel Canada Limited	10,000
Western Canada Steel, Limited:	
Vancouver Rolling Mills, Ltd.	32,000
TOTAL	3,909,010
Rails—Standard, over 60 lbs. per yard:	
Algoma Steel Corporation, Limited	150,000
Dominion Steel & Coal Corporation, Ltd.:	
Dominion Iron & Steel, Limited	280,000
TOTAL	430,000
Rails—60 lbs. or less per yard:	
Algoma Steel Corporation, Limited	7,000
Long Joint or Splice Bars and Tie Plate Bars:	
Algoma Steel Corporation, Limited	28,000
Dominion Steel & Coal Corporation, Limited:	
Dominion Iron & Steel, Limited	25,200
Steel Company of Canada, Limited	37,000
TOTAL	90,200

HOT-ROLLED STEEL PRODUCTS (Canada)

	Annual capacity (N. T.)
Structural Shapes—Heavy:	
Algoma Steel Corporation, Limited	190,000
Manitoba Rolling Mill Company, Limited	10,000
Steel Company of Canada, Limited	30,000
TOTAL	230,000
Structural Shapes—Light:	
Algoma Steel Corporation, Limited	48,000
Canadian Tube & Steel Products, Limited	102,240
Manitoba Rolling Mill Company, Limited	15,000
Steel Company of Canada, Limited	24,000
Western Canada Steel, Limited:	
Vancouver Rolling Mills, Limited	12,000
TOTAL	201,240
Steel Piling (Rolled):	
Algoma Steel Corporation, Limited	36,000
Plates (Sheared and Universal):	
Dominion Foundries and Steel, Limited	68,000
Steel Company of Canada, Limited	194,000
TOTAL	262,000
Hot Rolled Sheets:	
Algoma Steel Corporation, Limited	44,000
Atlas Steels, Limited	4,000
Steel Company of Canada, Limited	511,000
TOTAL	559,000
Coils for Cold Reduced Black Plate and Tin Plate:	
Dominion Foundries and Steel, Limited	266,000
Steel Company of Canada, Limited	182,000
TOTAL	448,000
Hot Rolled Strip:	
Algoma Steel Corporation, Limited	110,000
Dominion Foundries and Steel, Limited	19,000
Steel Company of Canada, Limited	15,000
TOTAL	144,000
Bars—Other than Concrete Reinforcement:	
Algoma Steel Corporation, Limited	141,000
Atlas Steels, Limited	104,000
Burlington Steel Company, Ltd.	19,000
Canadian Tube & Steel Products, Limited	39,760
Dominion Steel & Coal Corporation, Ltd.:	
Dominion Iron & Steel, Limited	61,600
Enamel & Heating Products, Limited	10,000
Manitoba Rolling Mill Company, Limited	44,660

OTHER FINISHED STEEL PRODUCTS (Canada)

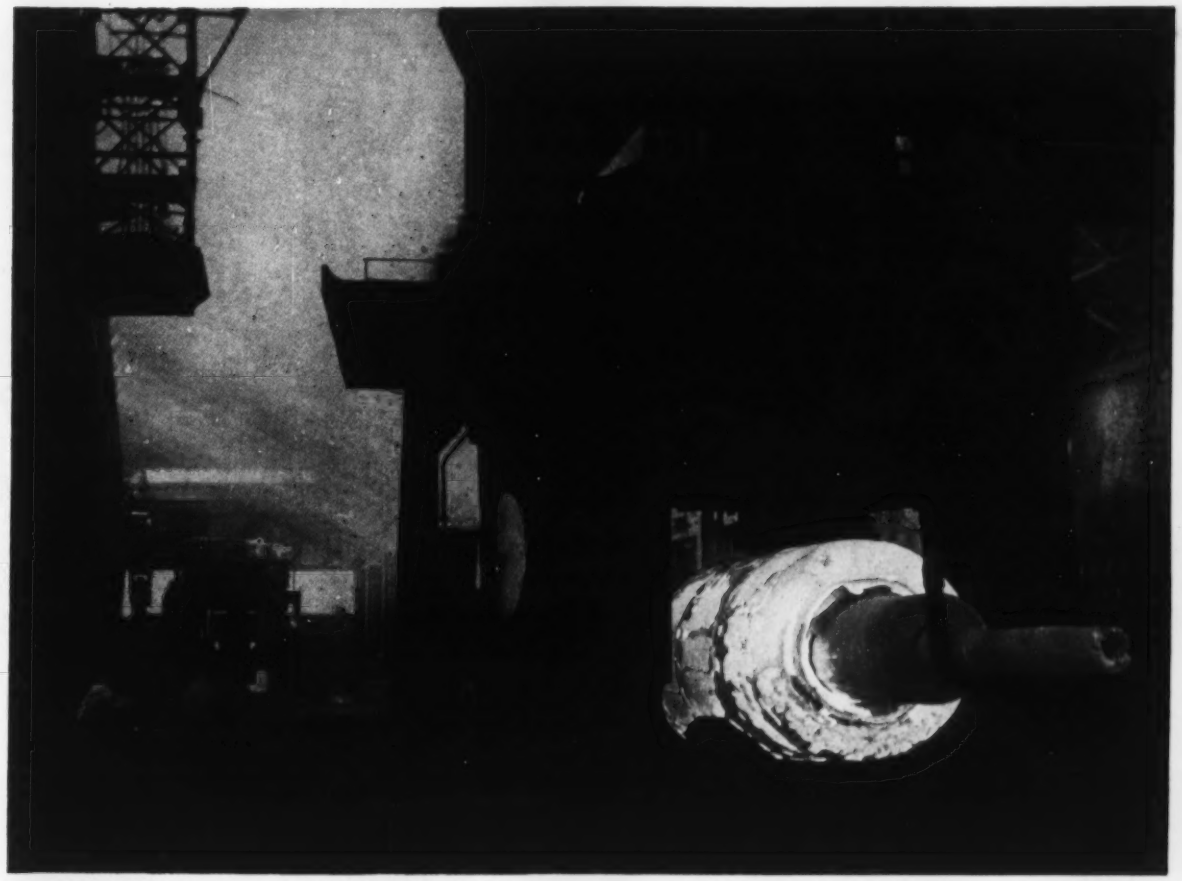
	Annual capacity (N. T.)
Products:	
Cold Finished Bars	95,000
Sheets—Cold Rolled	84,000
Sheets—Galvanized	92,000
Strip—Cold Rolled	347,000
Tin Plate—Electrolytic	225,000
Tin and Terne Plate—Hot Dipped	127,000
Splice Bars and Other Rail Joints	72,000
Tie Plates	108,000
Track Spikes	32,000
Wire—Plain	389,500
Wire—Barbed	43,000
Wire—Galvanized	108,500
Wire Nails	115,000
Wire Staples	7,220
Cut Nails	1,900
Woven Wire Fence, Netting and Reinforcing Fabric	64,600
Bale Ties	11,200
Pipe and Tubing:	
Buttweld	181,000
Lapweld	40,000
Electricweld	160,120
Seamless	40,000
Gasweld	2,500
Cold Finished Bars:	
Atlas Steels, Limited	10,000
Dominion Steel & Coal Corp., Limited	60,000
Union Drawn Steel Co. Limited	25,000
GRAND TOTAL	95,000
Sheets—Cold Rolled:	
Atlas Steels, Limited	4,000
Dominion Foundries and Steel Limited	40,000
Steel Company of Canada, Limited	40,000
GRAND TOTAL	84,000
Sheets—Galvanized:	
Steel Company of Canada, Limited	92,000
Strip—Cold Rolled:	
Algoma Steel Corporation, Limited	60,000
Atlas Steels, Limited	6,000
Dominion Foundries and Steel Limited	242,000
Stanley Steel Company Limited	20,000
Steel Company of Canada, Limited	19,000
GRAND TOTAL	347,000
Tin Plate—Electrolytic:	
Dominion Foundries and Steel, Limited	110,000
Steel Company of Canada, Limited	115,000
GRAND TOTAL	225,000

HOT-ROLLED STEEL PRODUCTS (Canada)

	Annual capacity (N. T.)
Steel Company of Canada, Limited	294,000
Sorel Industries, Limited	1,650
Vanadium Alloys Steel Canada Limited	10,000
TOTAL	725,670
Bars—Concrete Reinforcement:	
Algoma Steel Corporation, Limited	48,000
Burlington Steel Company, Ltd.	29,000
Canadian Tube & Steel Products, Limited	30,000
Manitoba Rolling Mill Company, Limited	25,000
Steel Company of Canada, Limited	47,000
Western Canada Steel, Limited:	
Vancouver Rolling Mills, Ltd.	20,000
TOTAL	199,000
Wire Rods:	
Atlas Steels, Limited	6,000
Dominion Steel & Coal Corporation, Ltd.:	
Dominion Iron & Steel, Limited	120,000
Steel Company of Canada, Limited	192,000
TOTAL	318,000
Skelp:	
Algoma Steel Corporation, Limited	60,000
TOTAL	60,000
Blooms and Billets for Forging:	
Algoma Steel Corporation, Limited	100,000
Atlas Steels, Limited	12,000
Dominion Steel & Coal Corporation, Ltd.:	
Dominion Iron & Steel, Limited	52,000
Sorel Industries, Limited	31,700
TOTAL	195,700
All Other Hot Rolled Products:	
Burlington Steel Company, Ltd.	3,000
Manitoba Rolling Mill Company Limited	200
TOTAL	3,200

OTHER FINISHED STEEL PRODUCTS (Canada)

	Annual capacity (N. T.)
Tin Plate—Hot Dipped:	
Dominion Foundries and Steel Limited	40,000
Steel Company of Canada, Limited	87,000
GRAND TOTAL	127,000
Splice Bars, Rail Joints, Tie Plates and Track Spikes:	
Algoma Steel Corporation, Limited	28,000
Canadian Tube & Steel Products, Limited	6,000
Dominion Steel & Coal Corporation, Limited:	
Dominion Iron & Steel Limited	25,000
Steel Company of Canada, Limited	153,000
GRAND TOTAL	212,000
Wire—Plain, Galvanized and Barbed:	
Atlas Steels, Limited	5,000
Canadian Tube & Steel Products, Limited	35,000
Dominion Steel & Coal Corporation, Limited:	
Canadian Steel Corporation Limited	47,600
Dominion Iron & Steel Limited	110,000
Graham Nail & Wire Products, Limited	25,000
Pender & Company, Ltd., James	8,000
TOTAL	190,600
Frost Steel & Wire Company, Limited	46,000
Morrison Steel & Wire Company, Limited	12,000
Steel Company of Canada, Limited	245,900
Laidlaw Bale Tie & Wire Co., Limited	6,500
TOTAL	252,400
GRAND TOTAL	541,000
Wire Products (Nails, Staples, Woven Fence, Netting, Reinforcing Fabric and Bale Ties):	
Canadian Tube & Steel Products, Limited	13,300
Dominion Steel & Coal Corporation, Limited:	
Canadian Steel Corporation, Limited	14,700
Dominion Iron & Steel Limited	25,600
Graham Nail & Wire Products, Limited	11,500
Pender & Company, Limited, James	8,000
TOTAL	59,800
Frost Steel & Wire Company, Limited	35,000
Morrison Steel & Wire Company, Limited	10,620
Steel Company of Canada, Limited	81,200
GRAND TOTAL	199,920
Pipe and Tubing:	
Atlas Steels, Limited	120
Burlington Steel Company, Limited	2,500
Canadian Tube & Steel Products, Limited	30,000
Page-Hersey Tubes, Limited	340,000
Steel Company of Canada, Limited	51,000
GRAND TOTAL	423,620



MIDVALE FORGINGS...*Shape up for tougher service*

As the giant press forges the 500,000 pound ingot, careful experienced hands guide every stroke . . . size and shape it to the required dimensions. Careful working and heating will finally shape this forging to an overall length of 46'-4¼" with an outside diameter of 61½".

Midvale forging quality is the result of absolute control from start to finish. From the time the scrap and pig iron are charged into the open hearth or electric furnaces "quality tests" and skilled hands take over. Ingots are forged on presses ranging from 1,500 tons to 14,000 tons capacity. Heat treating cycles based on Midvale's long experience are thoroughly followed to produce the maximum in mechanical properties. Final machining is done on equipment capable of handling rough or finish machining on practically any size product.

This is the reason Midvale forgings—whether 300 or 300,000 pounds are noted for their toughness, long service and never failing performance. The men of Midvale working with the right equipment and facilities offer a source of forgings, steel mill rolls and rings unsurpassed in quality and extra performance. Let their services, long experience and willingness help solve your forging problems.

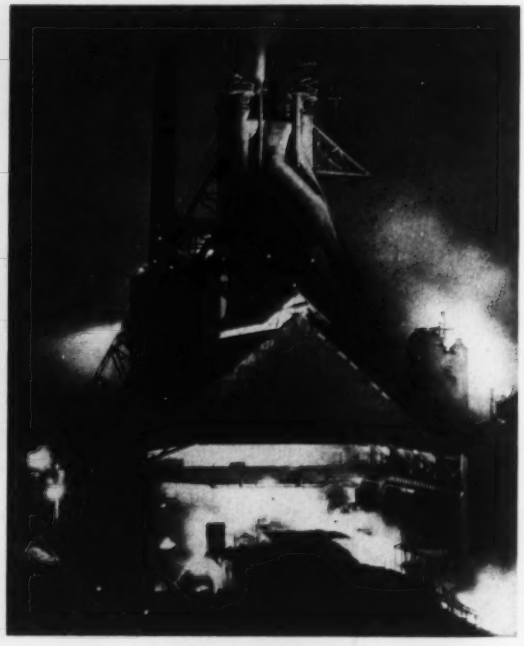
THE MIDVALE COMPANY-Nicetown, Philadelphia 40, Pa.

Offices: New York, Chicago, Pittsburgh, Washington, Cleveland, San Francisco

MIDVALE

FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS

More Furnaces Resort to Pressurized Operation



Republic's pace-setting furnace at Warren, O., converted to high top pressure a few years ago

Control of gas velocity under high top pressure blowing effects increase in output of the stack and a reduction in coke consumption and flue dust make

FURTHER recognition of a new process for increasing pig iron production from blast furnaces was made recently, by the signing of a license agreement by United States Steel Corp. and Arthur D. Little Inc., Cambridge, Mass., who introduced and pioneered high top pressure operation to the steel industry. This process has increased the daily output of converted blast furnaces by as much as 15 per cent.

Sets Company Record — The high top pressure process was first tried experimentally during World War II by co-operation between the War Metallurgy Committee and Republic Steel Corp., Cleveland. In 1953 an all-time company record of pig-iron production was set on Republic's Warren, O., pressurized furnace—474,028 net tons for the year, or 1573 net tons per day; at present the stack is operating at an even better rate. For the first six months of this year, 301,642 net tons of iron has been produced or an average of 1666 net tons per 24 hours. Coke consumed per ton of iron amounted to 1574 lb. Flue dust output amounted to 163 lb per ton of metal.

High top pressure operation consists of increasing the pressure in the furnace by throttling the exhaust gases. This requires somewhat higher blast pressures at the bottom of the furnace. The reducing gases, flowing through the furnace, are compressed, and it is possible to use more air, which permits burning more coke, and a subsequent increase in iron ore. The throttling valve also decreases the velocity of gas flowing through the furnace, which reduces the amount of flue dust blown out through the top.

This control over the reducing gas velocity, by means of the throttling valve, gives to the furnace operator three operational alternatives: (1) The furnace can be blown at substantially higher wind rates, maintaining the gas velocity at the normal rate; (2) it may be blown at the normal wind rate, thus reducing the gas velocity through the furnace; (3) it may be blown at an intermediate point, increasing somewhat the wind rate while maintaining a gas velocity well below normal.

Velocity Control—Some of the most important points with respect to this control of gas velocity are: (1) By decreasing the gas velocity, the coke rate can be reduced; (2) by decreasing the gas velocity, the amount of flue dust can be materially decreased; (3) by increasing the wind blown without increasing gas velocity, substantially more pig iron can be produced without increased coke and flue dust rates. Thus, the advantages of increased top pressure and reduced gas velocity are: Tonnage increases; flue dust production and coke consumption decreases—all reducing manufacturing costs. Moreover, stock movement is uniform, lost time normal, iron analyses uniform, and flushes are faster than with regular furnace operation. It readily can be seen that top pressure permits a

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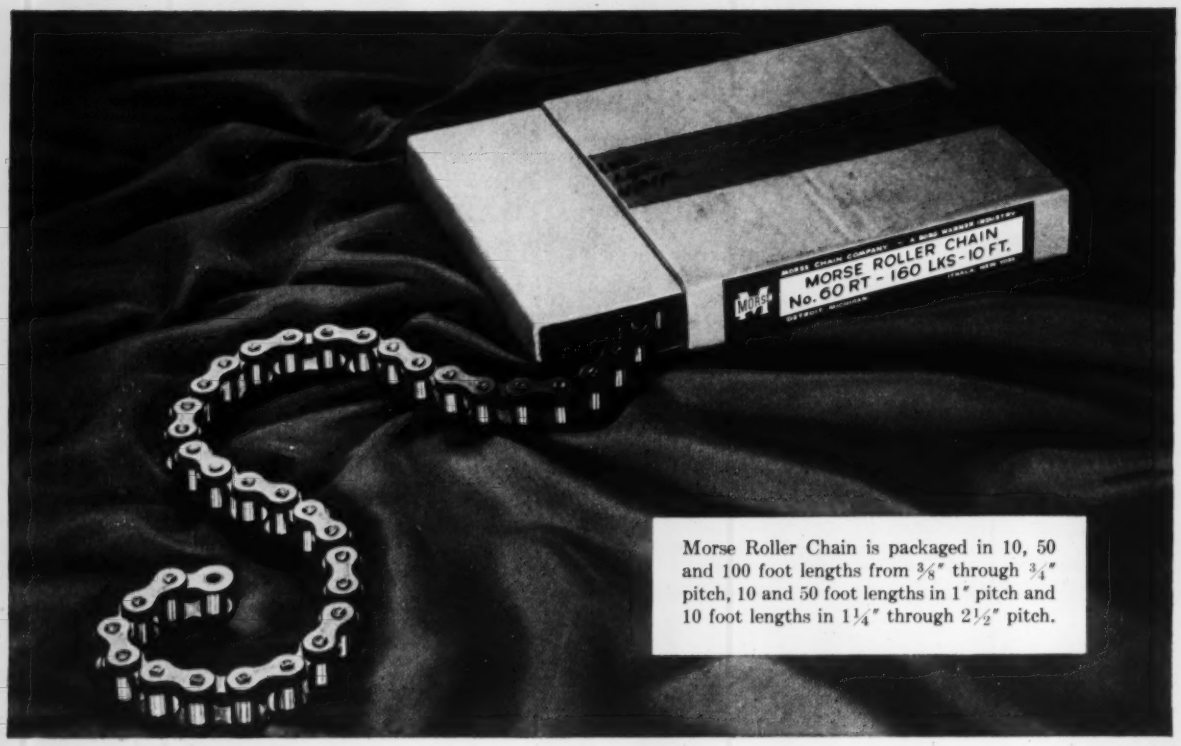

Morse Roller Chain is packaged in 10, 50 and 100 foot lengths from ⅜" through ¾" pitch, 10 and 50 foot lengths in 1" pitch and 10 foot lengths in 1¼" through 2½" pitch.

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Packaged Morse Roller Chain and Chain Parts end the time-consuming job of groping through bulk stocks in order to get the exact chain or part you need.

Morse packaging permits easier, neater storing and helps prevent accidental damage. The packaged roller chain and parts are clearly identified with labels indicating size and quantity, which noticeably reduce time spent taking inventory.

In addition to reducing handling problems and costs, Morse packaging maintains the fine precision of your roller chain and parts by guarding them from dirt, dust and corrosion. They stay clean until you are ready to use them.

Next time, order packaged Morse Roller Chain and Parts from your local Morse Distributor. .

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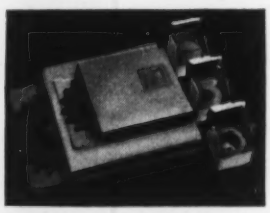

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Prompt delivery—no reboring, keyseating. Bushings permit close mountings. No flanges, collars, or protruding heads. Painted, boxed.

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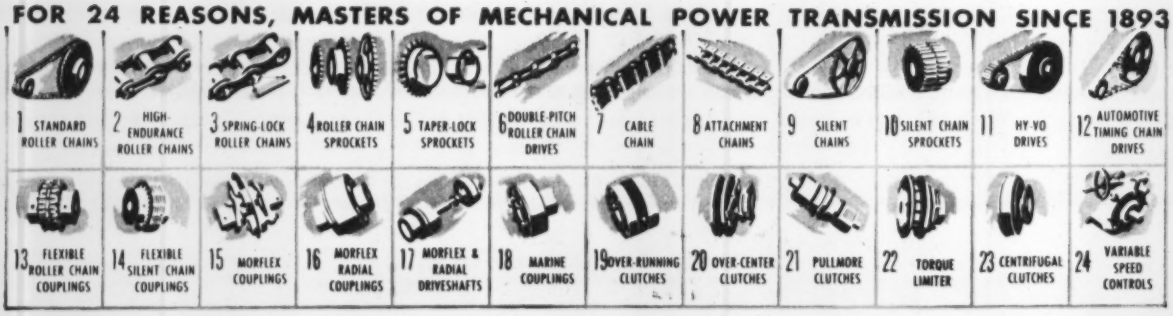
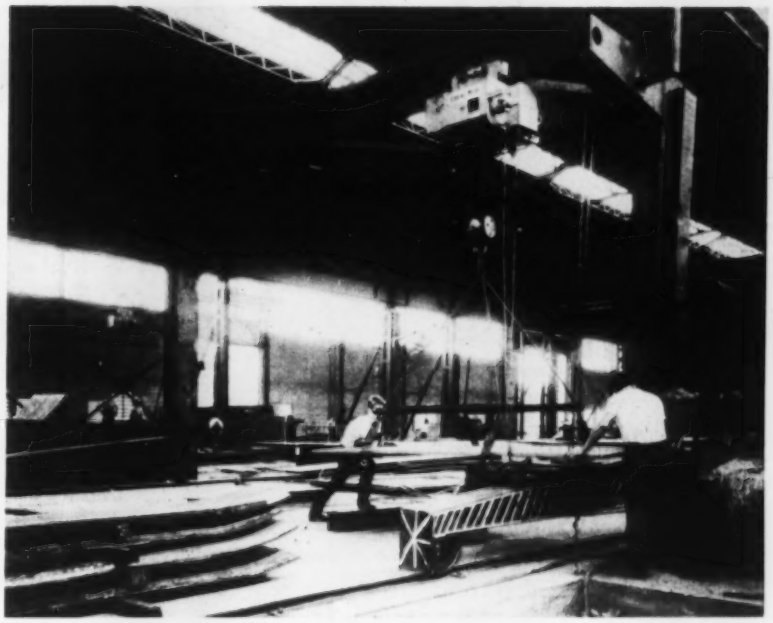


flexibility of operation not otherwise available to the furnace operator.

The alterations and changes required in a blast furnace to permit it to be operated by high top pressure are comparatively minor, and include: A one-piece hopper, to insure a tight seat for the big bell; equalizer valves, to equalize the furnace and between-bell pressures when the big bell is dumped; a control to prevent blowing of the washer seal in the wet washer; and a throttle-valve to regulate top pressure. In addition, there are other minor changes that may in some instances be necessary, such as more hold-down rollers and extra weights on the McKee top, and a packing gland for the gage rod. The blowers utilized should be capable of blowing at pressures about 6 to 8 lb above those normally used.

Foreign Stacks Pressurized—Today there are 13 licensed pressurized furnaces in operation in the United States. Licenses for the process have also been granted English and European steel companies, and it is known that Russia has converted many of its furnaces to the new process, although "without licenses." It was announced recently by the British Broadcasting Co. that the U.S.S.R. Zaporoyhye Iron and Steel Works had converted four blast furnaces to top pressure operation. These four are in addition to at least seven others known to have been converted to pressure behind the Iron Curtain; six of these are at Magnitogorsk, U.S.S.R.

Experience has shown that operating a pig iron blast furnace under pressure will increase the furnace output by approximately 15 per cent with no increase in labor requirements. The expense for raw materials, labor, power, and other items of manufacturing cost is reduced by more than one dollar per ton of iron. In addition, extra profit can be realized on increased steel production. The consumption of coke for each ton of iron made is not increased in spite of higher iron production. This would require considerably more coke without top pressure. The loss of ore in flue dust is reduced by more than 30 per cent.



Arc welded box sections provide strength and rigidity in the C-type end frames of this crane. Open ends permit plate movement outside crane span

Unique Design for Welded Gantry Crane

HANDLING heavy steel plates weighing up to 5 tons each through edge beveling and forming operations without undue loss of time has called for the design of specialized gantry cranes adapted to the peculiarities of the job and the plant in which the work was being done.

Plates in question were for penstocks at the Ft. Randall, Iowa, dam. Design and fabrication procedures were developed by the Pittsburgh-Des Moines Co., Des Moines, Iowa.

The Problem—Gantry cranes are designed to travel on rails 30 ft apart, permitting them to straddle the flame-cutting machine and the plate rolls. Height was limited to about 16 ft by the low overhead clearance in the plant. The end forming press being outside the crane span meant that the end frames of the cranes had to be open enough to permit 10 ft wide plates to extend through and into the press, as shown in the illustration.

An open C-shaped end frame proved to be the best solution. Lower leg of the frame, carrying the two wheels, is 14 ft in length while the upper horizontal member, supporting the trolley beam and 5-ton hoist, is 7 ft long. The main vertical column is 16 ft long.

Weld Savings — By welding the frame sections and the transverse structure a saving of 10 per cent was realized in material costs and 15 to 20 per cent in fabricating costs. Beyond that, a considerable saving was made in construction time since there were no holes to punch and ream, always a tedious process in riveted assemblies.

One year of steady service has shown the all-welded C-frames to be extremely rigid and impervious to abuse. Torsional rigidity of the columns is such that there is no tendency for the cranes to "rack" or get out of square on the track. This rigidity, together with the electro-fluid gearmotor drive, permits the operator to "inch" the gantry and its load into position with short, intermittent applications of power, without fear that the machine will lurch and possibly drop the load.

1954 AISE CONVENTION
Iron and Steel Exposition
SEPTEMBER 28 • OCTOBER 1 • CLEVELAND, O.

PROGRAM

Exposition and Technical Sessions Cleveland Public Auditorium

Sixteen technical sessions and 48 papers are open to any and all interested persons. You don't have to be an AISE member, and there is no registration fee

TUESDAY, SEPT. 28, 9:30 A.M.
ELECTRICAL SESSION (Ballroom)

Chairmen: D. C. McCrady, superintendent, electrical department, Steel Co. of Canada Ltd., Hamilton, Ont.; Arthur B. Glover, superintendent, Electrical Division, Acme Steel Co., Chicago.

Power and Control Cables for Steel Mills—E. D. Youmans, vice president, research and product development, Okonite Co., Passaic, N. J.

Methods for Locating Faults on Electrical Cables—Mount Fitzpatrick, cable plant engineer, Duquesne Light Co., Pittsburgh.

Communications in the Steel Industry—T. E. Hughes, general foreman, electric shops and motor rooms, Homestead district works, U. S. Steel Corp., Munhall, Pa.

TUESDAY, SEPT. 28, 9:30 A.M.
BLAST FURNACE SESSION (Club Room B)

Chairmen: C. G. Hogberg, assistant chairman, operating committee, U. S. Steel Corp., Pittsburgh; W. H. Collison, assistant general superintendent, Blast Furnace Division, Great Lakes Steel Corp., Ecorse, Mich.

Rapid Method of Relining a Blast Furnace—Bruno Vezzani, works engineer, Donora Steel and Wire Works, American Steel & Wire Division, U. S. Steel Corp., Donora, Pa.

Developments in Extending Blast Furnace Stack Life After Appearance of Hot Spots—R. W. Sundquist, assistant division superintendent, blast furnaces, U. S. Steel Corp., Gary, Ind.

The Venturi Washer for Blast Furnace Gas—J. E. Eberhardt, division head, and H. S. Graham, engineer, research dept., Bethlehem Steel Co., Bethlehem, Pa.

TUESDAY, SEPT. 28, 2:00 P.M.
MECHANICAL SESSION (Club Room B)

Chairmen: E. C. Hite, assistant superintendent maintenance, Timken Roller Bearing Co., Canton, O.; C. W. Bruce, chief engineer, Republic Steel Corp., Chicago.

Re-Use of Industrial Cooling Water—Why and How—Howard E. Degler, technical director, Marley Co., Kansas City, Mo.

Controlling Losses From Fire—C. V. Batley, insurance surveyor, Bethlehem Steel Co., Bethlehem, Pa.

Maintenance of Mobile Equipment—Frank C. Wier, superintendent material handling, and John C. Lantz, maintenance foreman, Steel and Tube Division, Timken Roller Bearing Co., Canton, O.

TUESDAY, SEPT. 28, 2:00 P.M.
COMBUSTION SESSION (Ballroom)

Chairmen: E. H. Cauger, assistant general manager, Wheeling Steel Corp., Steubenville, O.; H. W. Clark, open hearth metallurgist, Ford Motor Co., Dearborn, Mich.

Developments in Design of Modern Open Hearths—Jay J. Seaver, manager, Jay J. Seaver Engineers, Chicago.

Some Aspects of Open Hearth Waste Gas Analysis Control—F. P. Hubbell, superintendent fuel department, Homestead District Works, U. S. Steel Corp., Munhall, Pa.

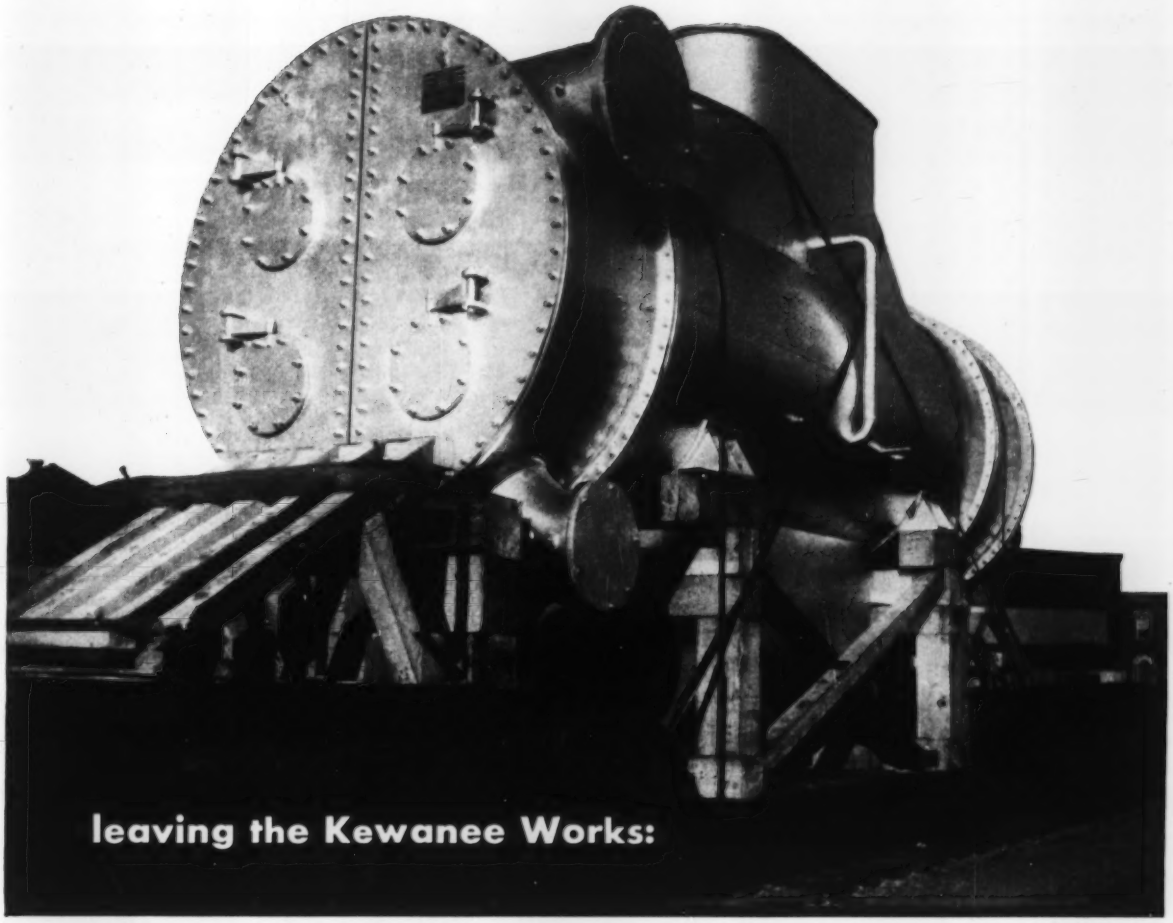
DSC's Multiple-Fueled Soaking Pits—F. C. McGough, superintendent of fuel and power, Detroit Steel Corp., Portsmouth, O.

WEDNESDAY, SEPT. 29, 9:00 A.M.
ELECTRICAL SESSION (Ballroom)

Chairmen: K. L. Johannsen, division superintendent, maintenance and utilities, U. S. Steel Corp., Fairless Hills, Pa.; R. J. Beeswy, electrical superintendent, Inland Steel Co., East Chicago, Ind.

Improvement in High Capacity Industrial Third Rail Systems—

E. L. ANDERSON • PRESIDENT



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Leaving the Kewanee, Ill. plant, this Ross Surface Condenser is one of a pair bound for New Mexico. It's a relatively short trip compared to the distances that many Ross units have traveled to reach countries such as Australia, Brazil, Iran, Aruba, Sumatra . . . mentioning but a few. Their efficiency and dependability have been proved in remote and isolated locations all over the world.

The reason Ross Surface Condensers are widely preferred, for installations both in the U. S. and foreign countries, can be expressed in two words: *advanced engineering* . . . engineering that introduced the first all welded steel surface condenser at Parr Shoals, S. C. in 1929 and pioneered numerous other developments, including Balanced Flow and divided tube bank design.

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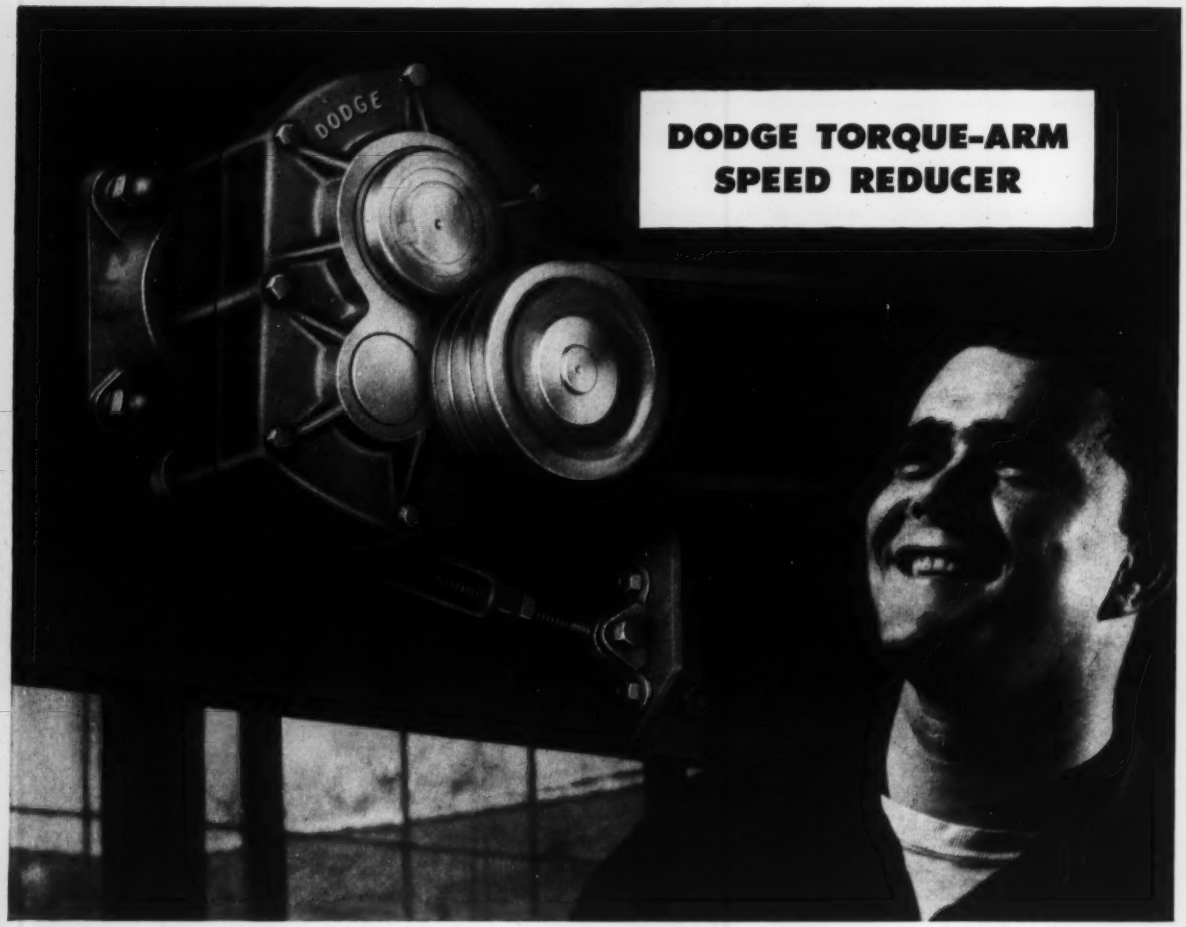

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This reducer is mounted directly on the driven shaft. No foundation, no flexible couplings, no sliding base required. No lining up difficulties. The torque-arm, fastened to any fixed object, anchors the reducer. Unit is driven through any V-belt drive. Stock Taper-Lock Sheaves prescribed for each job. Tri-Matic Overload Release and Backstop are available if desired.

Torque-Arm Speed Reducers are sold from Distributor's stocks—in single reduction and double reduction series—with capacities from 1 to 43 hp and output speeds from 12 to 330 rpm. Standardize on this modern idea in speed reduction—it saves you money.

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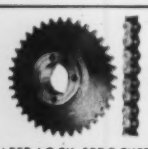
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1954 AISE CONVENTION
Iron and Steel Exposition

H. Yale Mageoch, chief engineer, Electric Service Mfg. Co., Philadelphia.
Taper vs. Straight Tread Crane Wheels—J. A. Bell, chief engineer, Bethlehem Steel Co., Bethlehem, Pa.
Protective Devices on Ore and Coal Bridges—S. Tatalovich, electrical engineer, Heyl & Patterson Inc., Pittsburgh.

WEDNESDAY, SEPT. 29, 9:00 A.M.

COMBUSTION SESSION (Club Room B)

Chairmen: G. J. Gockstetter, district combustion engineer, Republic Steel Corp., Chicago; F. R. Pullen, fuel engineer, Bethlehem Steel Co., Johnstown, Pa.
Rate of Heat Absorption of Steel. Furnace Performance Test Data Compared to Simplified Theoretical Calculations—Fred S. Bloom, president, Bloom Eng. Co. Inc., Pittsburgh.
A Continuous Batch Type Annealing Furnace—Ralph H. Gelder, works metallurgist, and Walter E. Hand, supervising metallurgist, Ashland Works, Armco Steel Corp., Ashland, Ky.
Applications of High Velocity Combustion to the Steel Industry—Leonard C. Peskin, president, Thermal Research & Engineering Corp., Conshohocken, Pa.

WEDNESDAY, SEPT. 29, 2:00 P.M.

STEELMAKING SESSION (Ballroom)

Chairmen: Robert Sergeson, chief metallurgical engineer, Rotary Electric Steel Co., Detroit; A. K. Blough, superintendent, No. 2 and 3 Melt Shops, Republic Steel Corp., Canton.
A New Way to Control Arc Furnaces—Charles W. Vokac, manager, Hydro-Arc Furnace Division, Whiting Corp., Harvey, Ill.
The Economic Aspects of the Oxygen Process—W. C. Rueckel, vice president, and J. W. Irvin, associate engineer, Kaiser Engineers, Division of Henry J. Kaiser Co., Oakland, Calif.
Ferromanganese Additions in Open Hearth Steelmaking—Rudolph Tietig Jr., engineer, A. J. Boynton & Co., Chicago.

WEDNESDAY, SEPT. 29, 2:00 P.M.

LUBRICATION SESSION (Club Room B)

Chairmen: N. I. Whiteley, lubrication engineer, American Steel and Wire Division, U. S. Steel Corp., Cleveland; W. M. Schuck, lubrication engineer, Armco Steel Corp., Middletown, O.
Nonflammable Hydraulic Fluids as Applied to the Steel Industry—C. R. Schmitt, manager, National Lubrication Sales, E. F. Houghton & Co., Philadelphia.
Stability of Lubricating Greases in Centralized Lubricating Systems—E. L. Armstrong, research associate and C. D. Thayer, senior technologist, technical service department, Socony-Vacuum Laboratories, Brooklyn, N. Y.
What Type of Grease for that Application?—W. A. Magie II, vice president, Magie Brothers Oil Co., Chicago.

THURSDAY, SEPT. 30, 9:00 A.M.

ELECTRICAL SESSION (Ballroom)

Chairmen: Ray T. Winterringer, assistant superintendent Electrical Department, Republic Steel Corp., Chicago; A. J. F. MacQueen, electrical superintendent, Algoma Steel Corp., Ltd., Sault Ste. Marie, Ont.
Design and Construction of Transformers for the Steel Industry—W. Walter Renberg Jr., electrical power design engineer, Pennsylvania Transformer Co., Canonsburg, Pa.
Kilovar, Kilowatt and Voltage Control in the Steel Plant—L. G. Levoy, industrial power engineer, Industrial Engineering Section, General Electric Co., Schenectady, N. Y.
Synchronous Condensers for Steel Mill Service—E. I. Pollard, chief electrical engineer, Elliott Co., Ridgway, Pa.

THURSDAY, SEPT. 30, 9:00 A.M.

LUBRICATION SESSION (Club Room B)

Chairmen: C. T. Lewis, chief lubrication engineer, Republic Steel Corp., Cleveland; D. N. Evans, assistant master mechanic, Inland Steel Co., East Chicago, Ind.
Modern Techniques of Lubrication Applied to Old Mill Equipment—E. G. Weimer, superintendent Primary Mills Maintenance, U. S. Steel Corp., Youngstown.
Bearing Maintenance for Economy—John A. Toth, assistant general manager, Bantam Bearings Division, Torrington Co., South Bend, Ind.
Antidotes for Sleeve Bearing Failures—Anthony F. Kaminskas, product and field engineer, Cleveland Graphite Bronze Co., Division of Clevite Corp., Cleveland.

THURSDAY, SEPT. 30, 2:00 P.M.

PROTECTIVE COATING SESSION (Club Room B)

Chairmen: D. E. Whitehead, general lubrication engineer, Crucible Steel Co. of America, Pittsburgh; J. B. Whitlock, general maintenance engineer, Armco Steel Corp., Middletown, O.
Maintenance Painting in the Steel Industry—Cecil Schofield, director of laboratories, Process and Product Development Division, Republic Steel Corp., Cleveland.
The Use of Heavy Cutback Asphaltum Mastic Coatings in Coke Plant Area—A. H. Bagenstose Jr., eastern regional manager, Insul-Mastic Corp. of America, Pittsburgh.
Color, The Second Value in Paint—N. A. Mason, manager, Maintenance Paint Sales, Pittsburgh Plate Glass Co., Pittsburgh.

THURSDAY, SEPT. 30, 2:00 P.M.

OPERATING PRACTICE SESSION (Ballroom)

Chairmen: George I. Bottcher, chief engineer, Allegheny Ludlum Steel Corp., Brackenridge, Pa.; S. O. Evans, chief of engineering, Tubular Products Division, Babcock & Wilcox Co., Beaver Falls, Pa.
Continuous Casting at Atlas Steels Ltd.—John F. Black, manager Continuous Casting Section, Koppers Co. Inc., Pittsburgh.
Hot Skin Scarfing With a Mechanical Bloom Turner—A. B. Glossbrenner, assistant general foreman, bloom conditioning department, Steel and Tube Division, Timken Roller Bearing Co., Canton, O.
Titanium: Its Progress and Its Applications—T. E. Perry, metallurgical department, and R. J. Garmy, engineering department, Central Alloy District, Republic Steel Corp., Massillon, O.

FRIDAY, OCT. 1, 9:00 A.M.

ROLLING MILL SESSION (Ballroom)

Chairmen: Alex Montgomery, Jr., assistant to vice president, Rolling, U. S. Steel Corp., Pittsburgh; Wade Hoffman, superintendent, Roll Shop, Jones & Laughlin Steel Corp., Aliquippa, Pa.
Cold Roll Forming—Elmer J. Vanderploeg, chief engineer, Yoder Co., Cleveland.
A-2 11-in. Rod Mill, Jones & Laughlin Steel Corp.—N. A. Hansen, superintendent, rod and wire department, Jones & Laughlin Steel Corp., Aliquippa, Pa.
Causes of Roll Breakage—Charles F. Peck Jr., assistant professor, and F. T. Mavis, professor and head, Civil Engineering, Carnegie Institute of Technology, Pittsburgh.

FRIDAY, OCT. 1, 9:00 A.M.

COMBUSTION SESSION (Club Room B)

Chairmen: E. T. Mortson, superintendent, Power and Fuel, National Tube Division, U. S. Steel Corp., McKeesport, Pa.; R. A. Lambert, superintendent, Steam and Combustion, Jones & Laughlin Steel Corp., Pittsburgh.
New Power, Steam and Blowing Installations at Ohio Steel Works—J. P. Katzenmeyer, project engineer, U. S. Steel Corp., Youngstown.
A Power Plant Report to Management—Stanley A. Nelson, supervisor, Plant Engineering, Deere & Co., Moline, Ill.
The Effect of Changes in Gas Composition on the Utilization of Fuel Gases—Edwin X. Schmidt, development supervisor, Cutler-Hammer Inc., Milwaukee.

FRIDAY, OCT. 1, 2:00 P.M.

ELECTRICAL SESSION (Ballroom)

Chairmen: E. F. Donatic, assistant general superintendent, Service Division, Kaiser Steel Corp., Fontana, Calif.; R. T. Lucas, electrical superintendent, Weirton Steel Co., Weirton, W. Va.
Operation of Magnetic Amplifier Controlled Tandem Mills—J. W. Brinks, steel mill engineer, Westinghouse Electric Corp., and J. C. Peth, chief elec. engineer, Pittsburgh Steel Co., Monessen, Pa.
Maintenance and Repair Experience with Various Hydraulic Systems on Charging Machines and Manipulators—Robert S. Bogar, assistant chief engineer, Bethlehem Steel Co., Johnstown, Pa.
A New Design Concept for D-C Motors—William R. Hough, Engineering vice president, and R. A. Geuder, manager, Industry Sales, Reliance Electric & Engineering Co., Cleveland.

FRIDAY, OCT. 1, 2:00 P.M.

OPERATING PRACTICE SESSION (Club Room B)

Chairmen: Leonard Larson, chief engineer, Corrigan-McKinney Works, Republic Steel Corp., Cleveland; George H. Greene, assistant general manager, Bethlehem Steel Co., Johnstown, Pa.
Pinholes in Steel Sheet and Pinhole Detecting Apparatus—George H. Rendel, research associate, Research and Development Laboratory, U. S. Steel Corp., Pittsburgh.
Continuous Drawing of Cold Finished Bars—Walter J. Prochak, assistant superintendent, Cold Drawn Bar department, Youngstown Sheet & Tube Co., Youngstown.
Ten Years of Mechanical Descaling of Hot Rolled Steel Products—Gilbert D. Dill, engineer in charge, Steel Division, American Wheelabrator & Equipment Corp., Mishawaka, Ind.

Producers, Users

PRODUCERS AND USERS of steel, after living in a vacuum for 13 years, are finding that back to normal no longer means a return to the good old days. "Normal" has taken on a dynamic, forward look.

In fact, the good old days are no longer good enough. Two forces are at work. Technological advances demand a never ending flow of improved metals, while current business conditions dictate to-the-bone economy.

How does the industry propose to meet the challenge?

With a great deal of optimism, a STEEL survey shows. Users of steel have some pretty firm ideas on what they want. Producers are out to do their level best to keep them happy.

Big Switch—"Obviously, the adjustment to a buyers' market, with the industry now unshackled of wartime controls and having greatly expanded facilities, is a big switch," says a big producer. "But it is also a challenge that is most welcome.

"To assure customers the best service, every unit of our organization (sales, production, research, quality control, traffic and accounting) is being made customer conscious. Figuratively speaking, the whole company is now in the sales department.

"We recognize the customer as our boss and are striving to give him what he wants."

Pinpointing—Typical of give-the-customer-what-he-wants programs is this one:

1. Extend product limitations where possible and advisable.

2. Help customers secure better transportation facilities and rates.

Users' Report to Producers

Structurals:

1. We want better impact resistance at zero and subzero temperatures.
2. Laminations cause some trouble.

Plates:

1. We find gage and edge dimensions are consistently on the high side. Out-of-flatness runs a close second.
2. Why can't carbon analysis be as close at it is for bars?

Bars:

1. We want greater freedom from seams, decarburization and surface defects. Parts are sometimes scrapped after heat treatment because of cracks caused by inclusions. Nonmetallics, such as oxides and silicides, should be under closer control.
2. Analysis ranges are too broad—carbon in particular. This complicates heat treatment.
3. Hardness ranges also are too broad.
4. We would like to see cheaper substitutes for the 8600 series.
5. Why aren't more of the better grades available in rectangles and flats? Instead of 1018, we would like to buy 1118 or 4650.
6. The acid etch of disc sections may be an insufficient test of internal soundness of high alloy bars.
7. We (the automotive people) want tighter hardenability specs for gear and pinion stock, and valve steels with better high temperature strength and resistance to embrittlement.

Sheets and Strip:

1. Our customers want close dimensional control, meaning we need uniform gages and minimum out-of-flatness.
2. Improved ductility is needed to draw complex parts requiring successive draws without intermediate anneals.
3. Keep the bubbles out of drawing quality killed steel.

Team Up to Make Better Steels

Both sides find their work is cut out for them: Technological advances call for more and more improved steels. Business conditions underline the importance of economy

3. Have local contact men make calls more frequently—providing up-to-date information on latest steel developments.

4. Re-organize order systems to provide better and quicker service information.

5. Institute closer controls to obtain steel specifications best suited to the customer's needs.

6. Place new emphasis on advertising programs, particularly with reference to relationships of producer, distributor, consumer.

7. Develop new products and pursue specialty products to keep abreast of technical advances presented by customers.

8. Provide semi-finished products to make for quicker delivery of finished products required by customers.

Ideas Plus—At first glance, most users seem to be talking directly from their pocketbooks, but a closer look (see Users' Report to Producers) reveals they are really looking for long-term savings through the vehicle of better quality. As a user of bars puts it:

"We would like to see closer tolerances on diameters, including size and out-of-round. The latter is a source of trouble in automatic machining. And if decarb limits were narrowed, less turning allowances would be necessary, resulting in less scrap."

So it goes. Users want better uniformity, better surfaces, better heat treating properties, fewer rejects, etc. Put them all together, they spell 1954, the year that producers and users found that "normal" means you've got to run just as fast as you can to even keep up in the race for better steels and better steel products.

. . . Quality is the Keynote

4. We find some coils are consistently on the high side in width.

5. We would like to see better formability without an increase in cost.

Standard Pipe and Tubes:

1. We need improvement in strength and tensiles.

2. Machinability could be better.

Stainless and Alloy Steels:

1. We find that distortion in welding is still a headache.

2. We would like to see a 310 grade with consistently good properties.

3. More corrosion resistance at less cost would be welcome.

4. We (the automotive people) are having some trouble with the decarburization of leaf spring flats—the 5160 and 9260 grades.

Tool Steels:

1. We find few defects in good tool steels, but if decarb limits were narrowed, less turning allowances would be necessary. Less scrap would result.

2. We are looking for better control of nonmetallics and residuals.

3. We think analyses and hardness ranges are too broad.

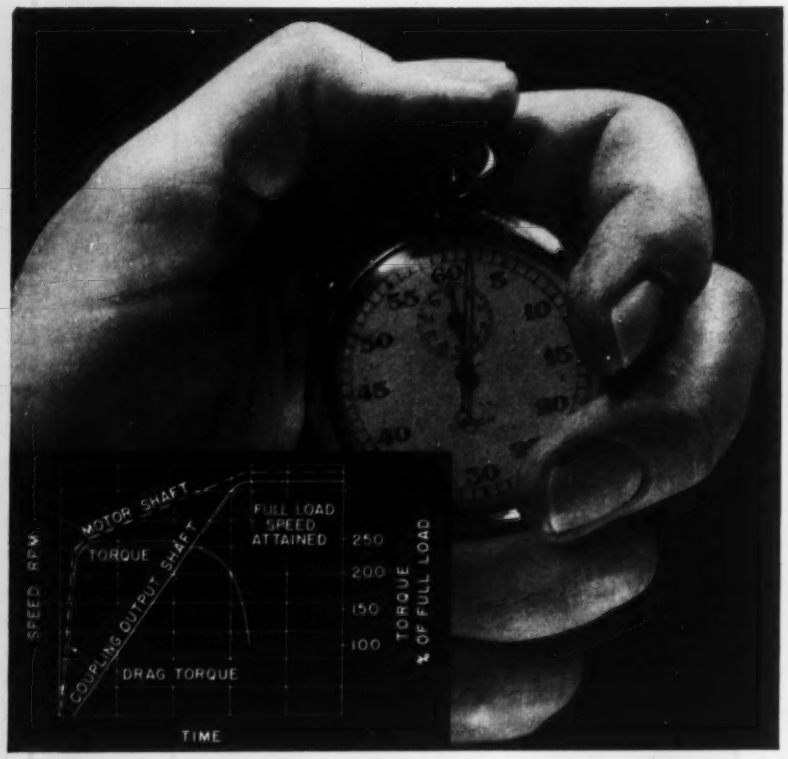
4. We need additives that reduce welding of the cutter to the workpiece.

5. Closer tolerances are needed on diameters—both size and out-of-round. Latter causes trouble in automatic machining.

Wire and Rods:

1. We (the automotive people) are looking for better high temperature properties in spring wire. Chrome silicon and stainless are possibilities. Something in between seems feasible.

2. We (the welding rod people) think producers could get better ingot yield if sulphur readings were taken in the center of the ingot, as well as top and bottom.



How to get your motors out of the high heat curve... *fast*

Thousands of equipment owners have already proved it: the fastest way to get a normal induction type motor "out from under the load" and up to normal rpm—and keep it there without shocks and vibrations—is through the fluid "slip" within a Twin Disc Double-Circuit Fluid Coupling.

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Twin Disc Fluid Couplings are available in 9 different types (HYDRO-SHEAVE® Drive is shown), with the broadest variety of input, output combinations, and in sizes from 7.45 to 27 to accommodate motor- or engine-installations from fractional to 850 hp.

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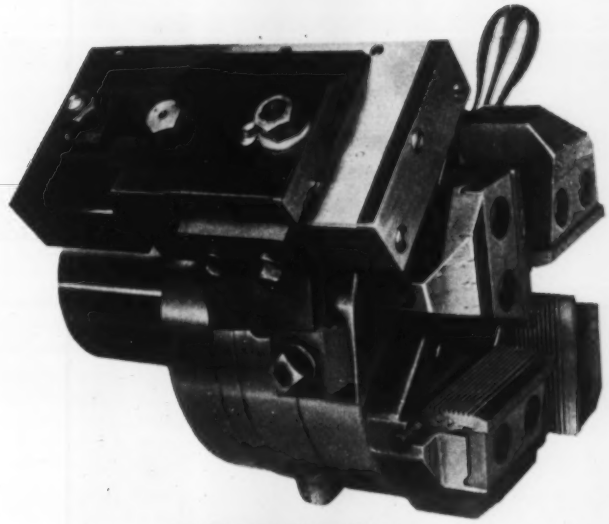
TWIN DISC

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin
Hydraulic Division, Rockford, Illinois

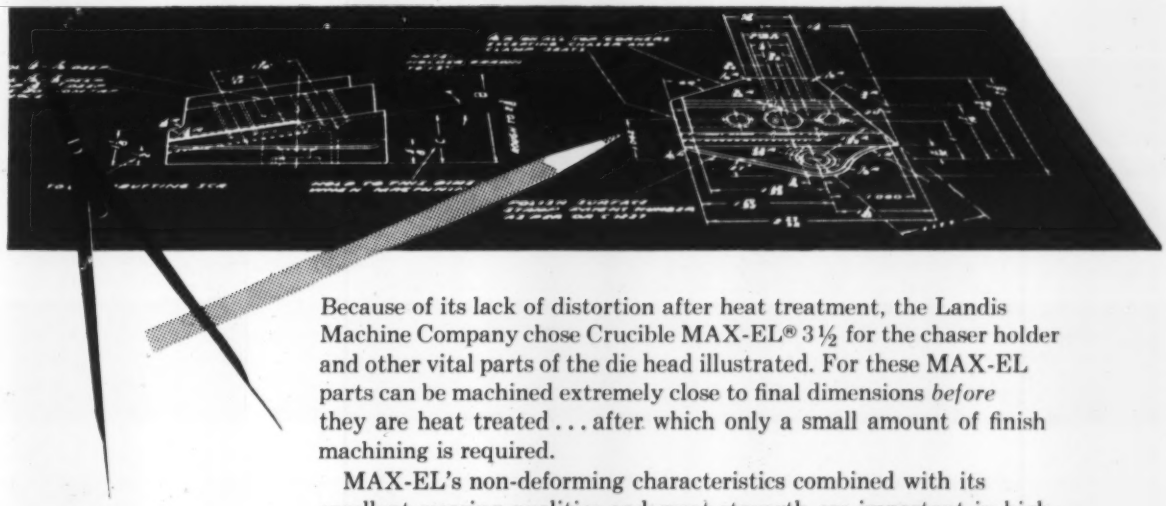
EXHIBITORS

Exhibit hours will be 10 a.m. to 10 p.m. on September 28 and 29; 10 a.m. to 5:30 p.m. on September 30; and 10 a.m. to 4 p.m. the final day. Nearly 200 exhibitors have already contracted for 409 booths, insuring a widely varied and educational display of all the latest in steel plant equipment and processes.

EXHIBITORS	BOOTH No.
ACF Industries Inc., Detroit	207, 208
Adalet Mfg. Co., Cleveland	24
Ajax Flexible Coupling Co. Inc., Westfield, N. Y.	101, 102, 103
Alemite Division, Stewart-Warner Corp., Chicago	126, 127
Allen-Bradley Co., Milwaukee	129, 130, 131
Alliance Machine Co., Alliance, O.	95, 96
Allis Co., Louis, Milwaukee	31, 32, 33
Allis-Chalmers Mfg. Co., Milwaukee	36, 37, 38, 39, 40, 41
American Air Filter Co. Inc., Louisville	469, 470
American Brake Shoe Co., New York	247, 248, 249, 268, 269, 270
American Flexible Coupling Co., Erie, Pa.	284
American Forge & Mfg. Co., Pittsburgh	499
American Wheelabrator & Equipment Corp., Mishawaka, Ind.	402, 403, 404
Ampco Metal Inc., Milwaukee	42, 43, 44
Appleton Electric Co., Chicago	300, 301
Askania Regulator Co., Chicago	240, 241
Atlas Mineral Products Co., Mertztown, Pa.	120, 121
Automatic Transportation Co., Chicago	68, 69, 70, 71
AUTOMATION Magazine, Cleveland	427, 428, 429
Bailey Meter Co., Cleveland	250, 251
Bearing Service Co., Pittsburgh	320, 321
Blaw-Knox Co., Pittsburgh	276, 277
Bliss Co., E. W., Canton, O.	72, 73
Bloom Engineering Co. Inc., Pittsburgh	84, 85, 86
Bowser Inc., Fort Wayne, Ind.	433, 434



Non-deforming **MAX-EL** alloy steel parts require minimum finish machining



Because of its lack of distortion after heat treatment, the Landis Machine Company chose Crucible MAX-EL® 3½ for the chaser holder and other vital parts of the die head illustrated. For these MAX-EL parts can be machined extremely close to final dimensions *before* they are heat treated . . . after which only a small amount of finish machining is required.

MAX-EL's non-deforming characteristics combined with its excellent wearing qualities and great strength are important in high-speed turret lathe die heads . . . and in many other applications.

Your shop will benefit, too, from the ease of machining, freedom from distortion, superior quality and longer tool life you get with MAX-EL. To start taking advantage of MAX-EL *now, call Crucible.*

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Costly crating eliminated — a tarpaulin now provides complete protection from the elements. ***Expensive bracing unnecessary*** — 2" x .050" Stanley "Car Bands" fastened to the car walls and floor anchor the filter sections securely and give positive protection against damage during shipment. ***Labor costs cut*** — Stanley Car Banding Tools and Equipment get the job done easier, faster. ***Over-all savings*** — $70 on each filter shipped!

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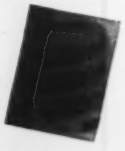

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Cities Service Oil Co., New York	483, 484
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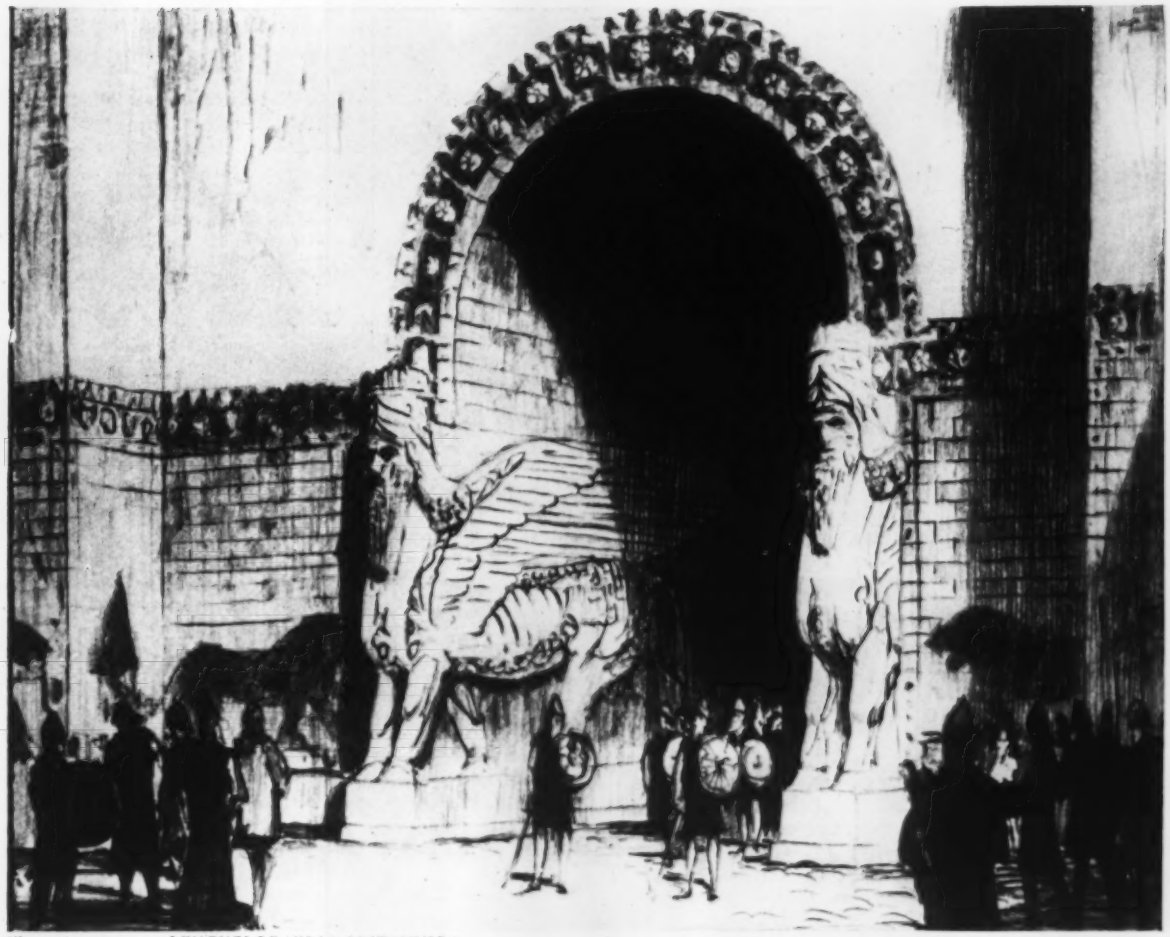

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Ancient Assyrian palace gateways were constructed of sun-dried clay brick. It is quite likely that those built during the 8th or 9th century B.C. were designed as shown above. The arch served both as a practical covering and as a means for decorative embellishment. The two flanking man-headed bulls probably had a religious significance . . . acting as guardians for all that was within.

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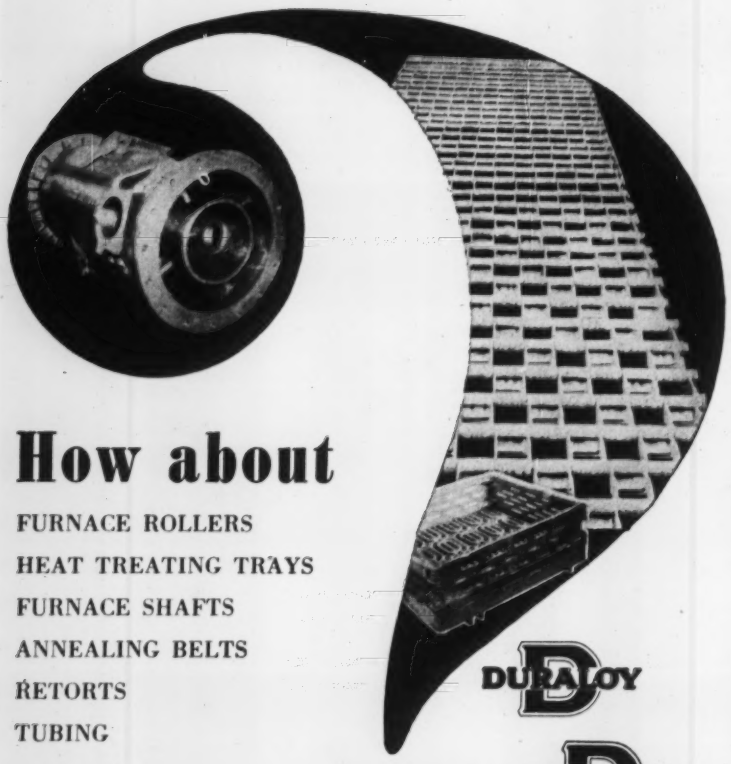

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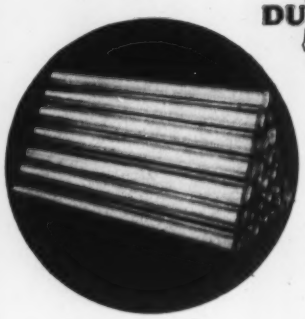

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Gleason Reel Corp., Mayville, Wis.	460
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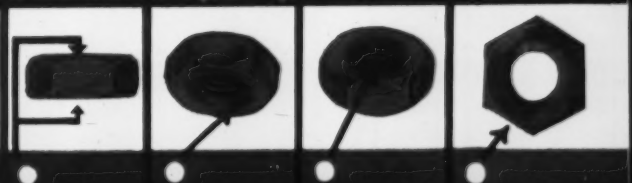

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4-36	1/4x3/32	D.C.	Mch. Screw Nut	A2-16802	1.56	1.61	1.67	1.78	1.92	2.18	2.50	3.12	0.05	0.40
4-40	1/4x3/32	D.C.	Mch. Screw Nut	A2-16803	"	"	"	"	"	"	"	"	0.05	0.40
4-48	1/4x3/32	D.C.	Mch. Screw Nut	A2-16804	"	"	"	"	"	"	"	"	0.05	0.40
5-40	5/16x7/64	D.C.	Mch. Screw Nut	A2-20806	1.96	2.02	2.10	2.23	2.41	2.74	3.14	3.92	0.08	0.77
5-44	5/16x7/64	D.C.	Mch. Screw Nut	A2-20807	"	"	"	"	"	"	"	"	0.08	0.77
6-32	5/16x7/64	D.C.	Mch. Screw Nut	A2-20802	"	"	"	"	"	"	"	"	0.08	0.74
6-40	5/16x7/64	D.C.	Mch. Screw Nut	A2-20803	"	"	"	"	"	"	"	"	0.08	0.74
8-32	11/32x1/8	D.C.	Mch. Screw Nut	A2-22802	2.36	2.43	2.53	2.69	2.90	3.30	3.78	4.72	0.10	1.00
8-36	11/32x1/8	D.C.	Mch. Screw Nut	A2-22803	"	"	"	"	"	"	"	"	0.10	1.00
10-24	3/8x1/8	D.C.	Mch. Screw Nut	A2-24804	2.42	2.49	2.59	2.76	2.98	3.39	3.87	4.84	0.12	1.20
10-32	3/8x1/8	D.C.	Mch. Screw Nut	A2-24805	"	"	"	"	"	"	"	"	0.12	1.20
12-24	7/16x5/32	S.C.	Mch. Screw Nut	A1-28809	4.29	4.42	4.59	4.89	5.28	6.01	6.86	8.58	0.19	2.00
12-28	7/16x5/32	S.C.	Mch. Screw Nut	A1-28810	"	"	"	"	"	"	"	"	0.19	2.00
1/4-20	7/16x5/16	S.C.	Mch. Screw Nut	A1-28803	4.65	4.79	4.98	5.30	5.72	6.51	7.44	9.30	0.23	2.27
1/4-24	7/16x5/16	S.C.	Mch. Screw Nut	A1-28804	"	"	"	"	"	"	"	"	0.23	2.27
1/4-28	7/16x3/16	S.C.	Mch. Screw Nut	A1-28805	"	"	"	"	"	"	"	"	0.23	2.27
5/16-18	9/16x7/32	S.C.	Mch. Screw Nut	A1-36802	7.27	7.49	7.78	8.29	8.94	10.18	11.63	14.54	0.47	4.30
5/16-24	9/16x7/32	S.C.	Mch. Screw Nut	A1-36803	"	"	"	"	"	"	"	"	0.47	4.30
3/8-16	5/8x1/4	S.C.	Mch. Screw Nut	A1-40801	9.78	10.07	10.46	11.15	12.03	13.69	15.65	19.56	0.59	5.84
3/8-24	5/8x1/4	S.C.	Mch. Screw Nut	A1-40802	"	"	"	"	"	"	"	"	0.59	5.84

HEXAGON ALUMINUM

Thread Size	Width Across Flats	Total Length	Tap Depth	Fischer Part Number	Net Price 1,000—Not Burnished: 200M Or More	100M To 200M	50M To 100M	25M To 50M	10M To 25M	5M To 10M	1M To 5M	Less Than 1M	Bright Burnish Extra Per M. Min. Charge $3.50 Lot Item	Approx. Weight Lbs. Per 1,000
4-36	1/4	1/4	5/32	A7-16805	4.19	4.29	4.39	4.59	5.19	6.19	14.19	19.19	0.10	0.90
6-32	5/16	9/32	3/16	A7-20804	4.19	4.29	4.39	4.59	5.19	6.19	14.19	19.19	0.15	1.50
8-32	5/16	9/32	3/16	A7-20805	"	"	"	"	"	"	"	"	0.15	1.37
10-24	3/8	11/32	7/32	A7-24806	5.76	5.86	5.96	6.16	6.76	7.76	15.76	20.76	0.27	2.43
10-32	3/8	11/32	7/32	A7-24807	"	"	"	"	"	"	"	"	0.27	2.43
12-24	3/8	11/32	7/32	A7-24808	"	"	"	"	"	"	"	"	0.27	2.27
1/4-20	7/16	3/8	7/32	A7-28806	7.43	7.53	7.63	7.83	8.43	9.43	17.43	22.43	0.38	3.35
1/4-28	7/16	3/8	1/4	A7-28807	"	"	"	"	"	"	"	"	0.38	3.35
5/16-18	9/16	7/16	9/32	A7-36804	12.55	12.65	12.75	12.95	13.55	14.55	22.55	27.55	0.65	6.50
5/16-24	9/16	7/16	9/32	A7-36805	"	"	"	"	"	"	"	"	0.65	6.50
3/8-16	5/8	1/2	5/16	A7-40803	17.65	17.75	17.85	18.05	18.65	19.65	27.65	32.65	0.85	8.50
3/8-24	5/8	1/2	5/16	A7-40804	"	"	"	"	"	"	"	"	0.85	8.50

HEXAGON ALUMINUM

Thread Size	Width Across Flats	Total Length	Fischer Part Number	Net Price 1,000—Not Burnished: 200M Or More	100M To 200M	50M To 100M	25M To 50M	10M To 25M	5M To 10M	1M To 5M	Less Than 1M	Burnish Extra Per M. Min. Charge $3.50 Lot Item	Approx. Weight Lbs. Per 1,000
4-36	1/4	15/64	A8-16806	3.85	3.95	4.05	4.25	4.85	5.85	13.85	18.85	0.10	0.90
6-32	5/16	1/4	A8-20809	3.85	3.95	4.05	4.25	4.85	5.85	13.85	18.85	0.15	1.40
8-32	5/16	1/4	A8-20810	"	"	"	"	"	"	"	"	0.15	1.40
10-24	3/8	9/32	A8-24817	5.46	5.56	5.66	5.86	6.46	7.46	15.46	20.46	0.27	2.20
10-32	3/8	9/32	A8-24818	"	"	"	"	"	"	"	"	0.27	2.20
12-24	3/8	9/32	A8-24819	"	"	"	"	"	"	"	"	0.27	2.20
1/4-20	7/16	21/64	A8-28817	7.08	7.18	7.28	7.48	8.08	9.08	17.08	22.08	0.38	3.33
1/4-28	7/16	21/64	A8-28818	"	"	"	"	"	"	"	"	0.38	3.33
5/16-18	9/16	3/8	A8-36806	12.10	12.20	12.30	12.50	13.10	14.10	22.10	27.10	0.65	6.15
5/16-24	9/16	3/8	A8-36807	"	"	"	"	"	"	"	"	0.65	6.15
3/8-16	5/8	27/64	A8-40805	16.60	16.70	16.80	17.00	17.60	18.60	26.60	31.60	0.85	8.33
3/8-24	5/8	27/64	A8-40806	"	"	"	"	"	"	"	"	0.85	8.33

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Republic Flow Meters Co., Chicago	216

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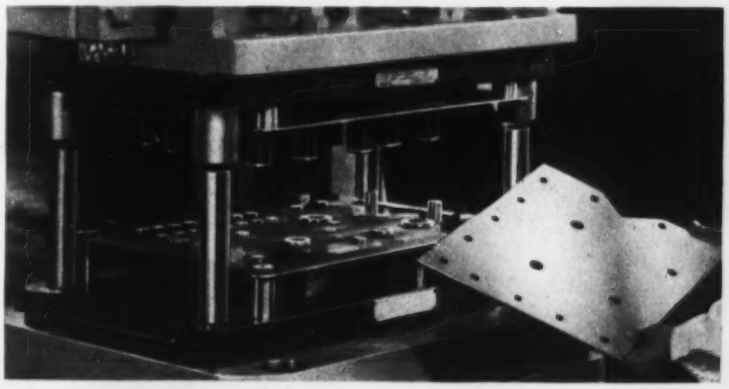
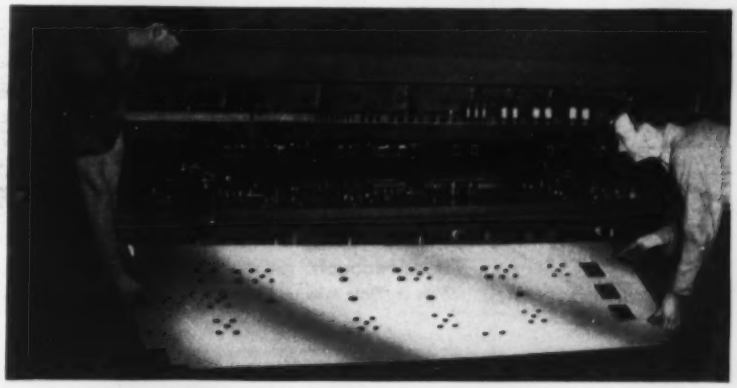
All units and parts are interchangeable and used repeatedly in different arrangements. **INCREASE PRESS PRODUCTION**—*Down time is minutes as compared to hours for changeover.* For precision work in all types and sizes of presses. **START PRODUCTION AT ONCE.** Pierce materials up to ¼" thick mild steel. Standard sizes and shapes available up to 3 inches. Special sizes to order.



Whistler *MAGNETIC* Dies at work in large inclinable press. Magnetized retainers hold the units. No bolting required. A fast, economical method in making up a punch and die set for short or long runs. All parts re-usable.



Whistler *ADJUSTABLE* Dies on perforating and notching job, using Tee slotted die set. With Whistler Adjustable Punch and Die units production starts within hours instead of weeks. Last minute job changes made quickly.

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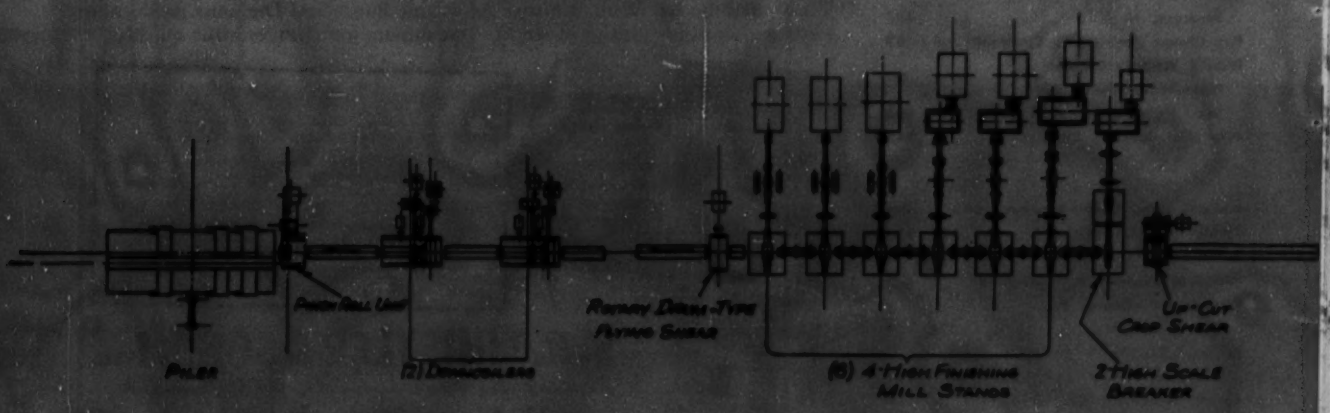


produces hot rolled strip used in wide range of products

This versatile Lewis Continuous Hot Strip Mill is rolling out strip in a wide range of widths and gages . . . and of suitable chemical and physical properties to be used in a variety of products. These range from automotive parts, building hardware, household utensils, and cutlery to tin plate for packing food products.

Designed for straight line operation, from heating furnace to run-out tables, as shown in the drawing. Adapted for production of both cut sheets and coils. Two down coilers of completely new design produce a very tight and even coil.

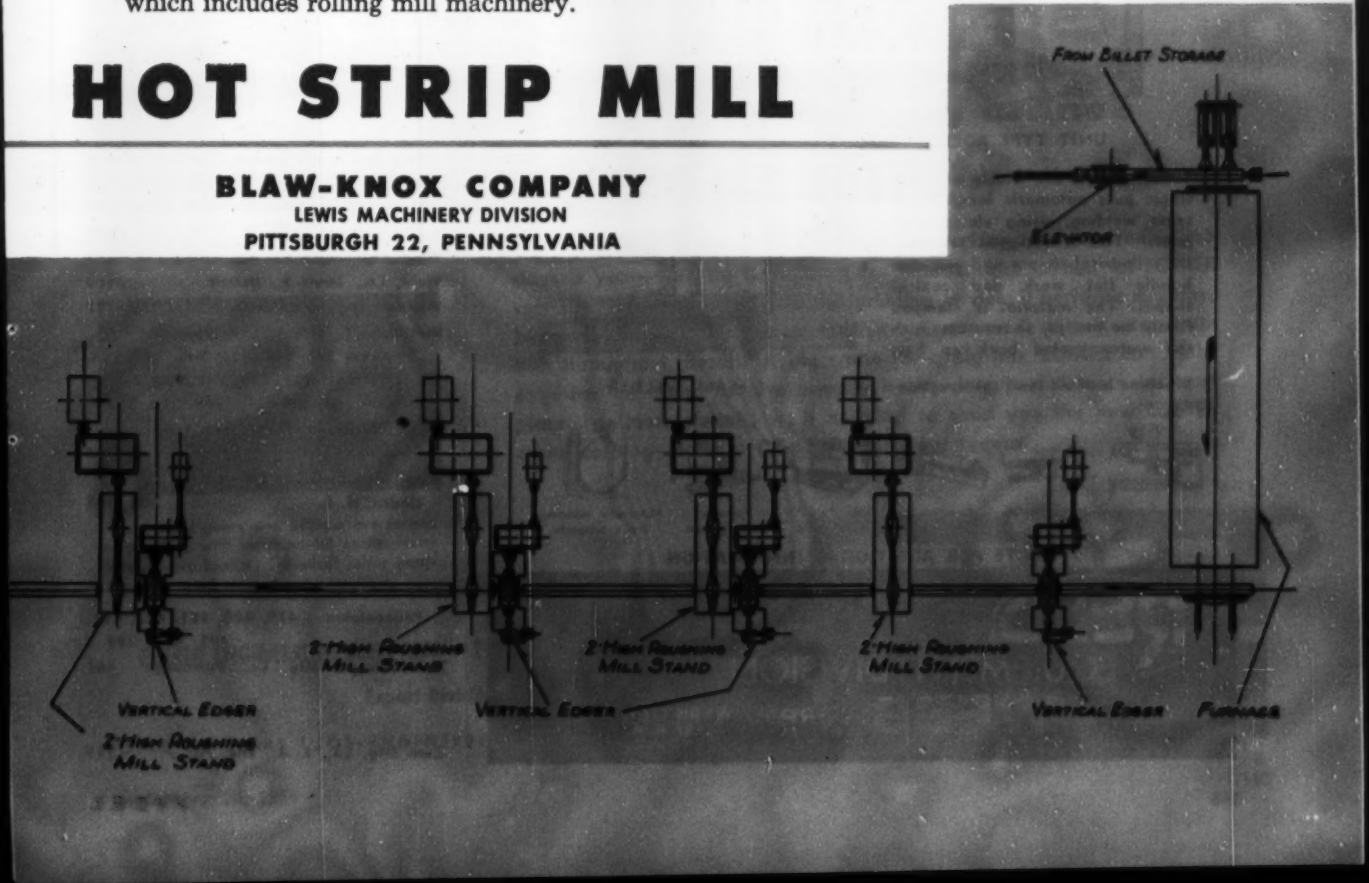
If increased production is desired in the future, a second furnace would readily double the present production. And an additional horizontal stand can be easily installed in space provided between No. 1 vertical edger and No. 1 horizontal stand.

The effective performance of the Lewis Continuous Hot Strip Mill is another example of how our engineers fully understand the most intimate details of mill practice. Their practical experience and engineering know-how enable them to design sturdy mill machinery to meet specific job requirements.

Our experienced engineering staff and modern manufacturing facilities are always readily available to help you with any problem which includes rolling mill machinery.

HOT STRIP MILL

BLAW-KNOX COMPANY
LEWIS MACHINERY DIVISION
PITTSBURGH 22, PENNSYLVANIA



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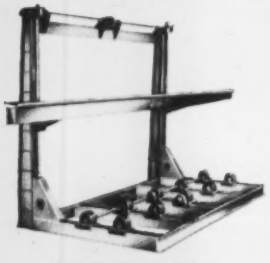
WEBB PLATE FABRICATING MACHINERY

The WEBB Corporation is the only manufacturer to offer a complete line of machines and fixtures built exclusively for the tank fabricator. Designed for use with manual, semi-automatic or full automatic welding processes. These machines are built for rugged use, using welded steel construction wherever possible.

In selecting a time-proven product of the Reed Equipment Division, you are buying guaranteed performance and a machine designed to do your work efficiently and economically.



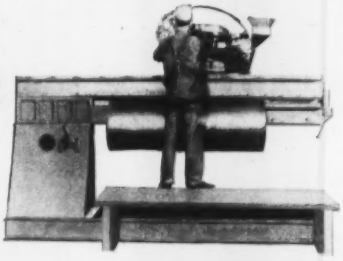
UNIT TYPE ROLL

A complete line of Unit Type Track Supports and Turning Roll Fixtures can be provided for the welding of longitudinal and girth seams of cylindrical vessels, to 12' in diameter and weighing up to 9 tons.

The unit is of all steel construction and all critical surfaces are machined to insure accuracy.

These fixtures are widely used for single pass automatic longitudinal seam welding, using closed butt joints. This is designed primarily for cylindrical shapes and will also handle flat work and conical shapes. The material is clamped firmly in the jig in contact with the water cooled back up bar.

Machine is of all steel construction.



SEAM WELDER

Horn Type Fixtures | Cylinder Flange Offsetters | Assembly Fixtures | Unit Type Turning Rolls | Portable Turning Rolls | Automatic Welding Track Supports

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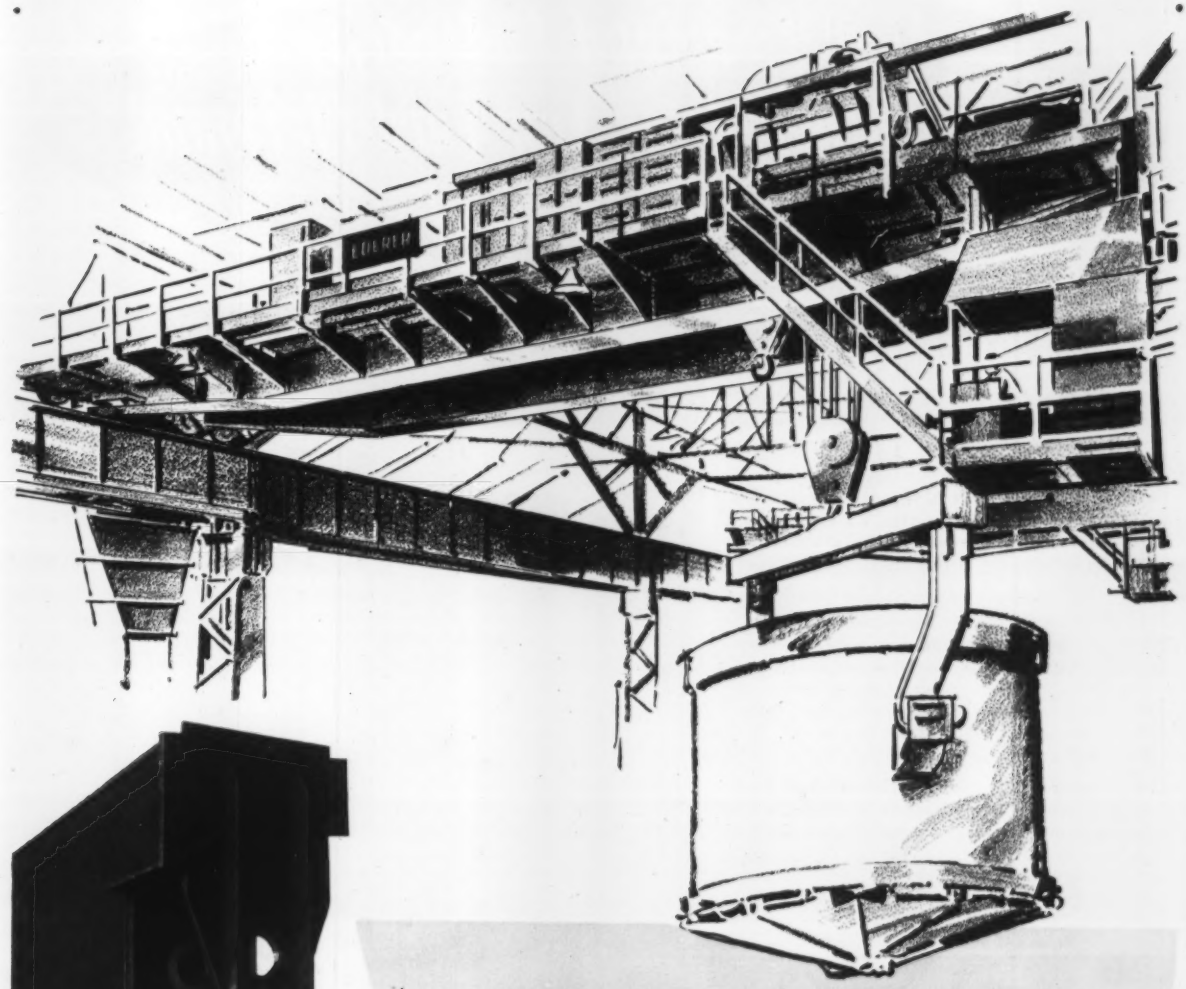
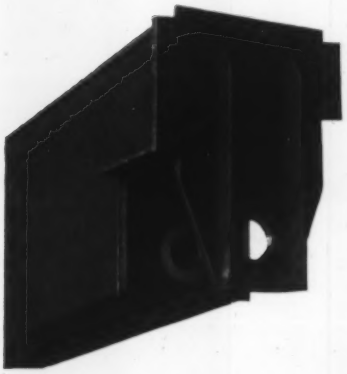
THE WEBB CORP. WEBB CITY, MO. U. S. A.





This typical steel mill crane girder is all-welded box section, with end construction of heavy plate, saddle-type for connection to pony trucks.

These hoist gears and pinions are forged alloy steel with machine-cut teeth. Hoist has double brakes. Spherical roller bearings are used throughout.

When you say "Big Steel" —that means big cranes

The heaviest duty cranes made are those working in a steel mill—365 days a year—with no time down for maintenance. When an EDERER crane is "job-engineered" for this grueling service, it performs mightily, because a basic "plus" in all EDERER-built cranes is oversize construction throughout. Result? A big crane for a big job. EDERER can "job-engineer" a crane to give equally heavy duty performance in *your* plant. For more details, we'll be glad to send you the new EDERER crane catalog—Bulletin CR-610—upon your request.

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CRANES

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OVER 50 YEARS "JOB-ENGINEERING" CRANES FOR INDUSTRY

Four Cleveland Underdrive Presses Ordered for New Ford Cleveland Stamping Plant

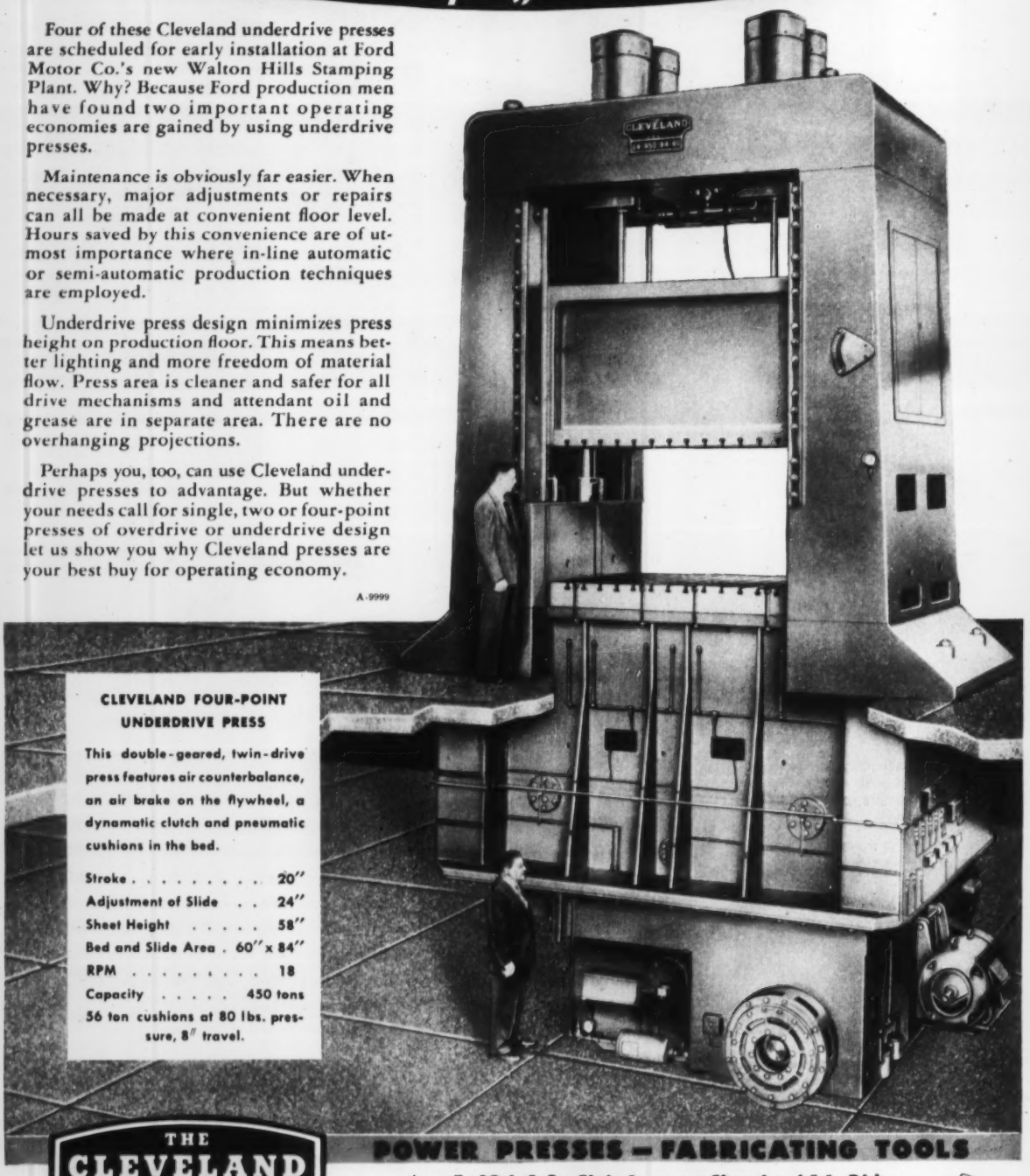
Four of these Cleveland underdrive presses are scheduled for early installation at Ford Motor Co.'s new Walton Hills Stamping Plant. Why? Because Ford production men have found two important operating economies are gained by using underdrive presses.

Maintenance is obviously far easier. When necessary, major adjustments or repairs can all be made at convenient floor level. Hours saved by this convenience are of utmost importance where in-line automatic or semi-automatic production techniques are employed.

Underdrive press design minimizes press height on production floor. This means better lighting and more freedom of material flow. Press area is cleaner and safer for all drive mechanisms and attendant oil and grease are in separate area. There are no overhanging projections.

Perhaps you, too, can use Cleveland underdrive presses to advantage. But whether your needs call for single, two or four-point presses of overdrive or underdrive design let us show you why Cleveland presses are your best buy for operating economy.

A-9999



CLEVELAND FOUR-POINT UNDERDRIVE PRESS

This double-geared, twin-drive press features air counterbalance, an air brake on the flywheel, a dynamatic clutch and pneumatic cushions in the bed.

Stroke	20″
Adjustment of Slide	24″
Sheet Height	58″
Bed and Slide Area	60″ x 84″
RPM	18
Capacity	450 tons

56 ton cushions at 80 lbs. pressure, 8″ travel.

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CITY FOUNDRY DIVISION • SMALL TOOL DEPARTMENT

Roll Gets a Shave

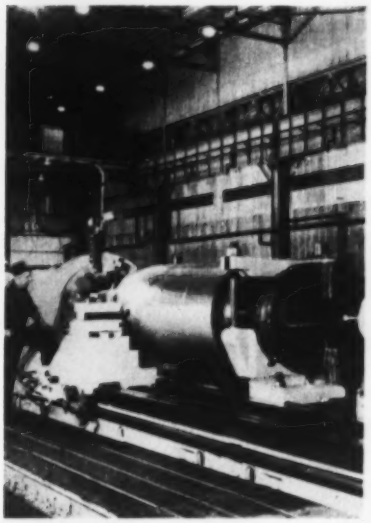
WHERE STEEL is rolled, spectacular mill stands capture the imagination—and the camera's eye. But once in a while the camera sneaks behind the scenes to picture an operation vital to every rolling mill—the shop where rolls are made and kept in shape.

The 60-inch screw feed lathe at the roll shop of United States Steel Corp.'s Fairless Works, is turning a 30-ton steel roll for the 45-inch universal slabbing mill. The roll body is 45 inches in diameter and 90 inches long.

Well Dressed—Continued rolling contact with hot steel causes slab mill rolls to become rough and fire-cracked. Then rolls are removed from the mill and taken to the roll shop for redressing. The roughened and worn surface of the roll is peeled off, leaving a smooth new surface ready for the mill.

The Mackintosh-Hemphill lathe is 42 feet long and has a maximum distance between centers of 20 feet. Long and cross feeds are controlled by power-driven feed screws. By supporting the rolls in neck rests instead of on centers during the dressing operation, concentricity of the turned roll body with necks is maintained.

At Fairless the roll shop serves all the hot mills including the 45-inch slabbing mill, the 80-inch hot strip mill, cold mills, the 40-inch bloomer, the 30-inch and 21-inch billet mills and 10-inch bar mills.



ROLL LATHE
. . . new life for rough rolls

Distortion is Controlled in BRAD FOOTE'S DEEP CASE HARDENING

The BRAD FOOTE
***DEEP* CASE HARDENING** *process has been perfected to a degree which practically eliminates distortion*

GEARS RUN TRUE

No place is distortion control more important than on heavy duty gears which are run almost continuously at full rating and subjected to extreme shock loads such as are encountered in rolling mill operations. BRAD FOOTE **DEEP CASE HARDENED** gears run true and distribute the load evenly across the full face and on the designed bearing surfaces of each tooth.

HARD TOOTH SURFACES

In addition, BRAD FOOTE rigidly controls to set standards the depth of **DEEP CASE HARDENING** and the carbon content. The tooth surfaces are of maximum hardness for long life, but the carbon content is gradually diminished at successive depths below the surface until it blends to the metal of the core itself.

SHOCK-RESISTANT CORES

Thus the cores of the teeth and the body of the gear remain ductile and shock-resistant while the teeth are given an increase in service life of over 50%.

ASK FOR QUOTATION

It will pay you to try a set of these gears on your toughest job. Send your specifications today for quotation.

BRAD FOOTE *makes* Spur, Bevel, Helical, Spiral Bevel, Herringbone, Zerol, Worms, Worm Gears, Reducers, Transmissions

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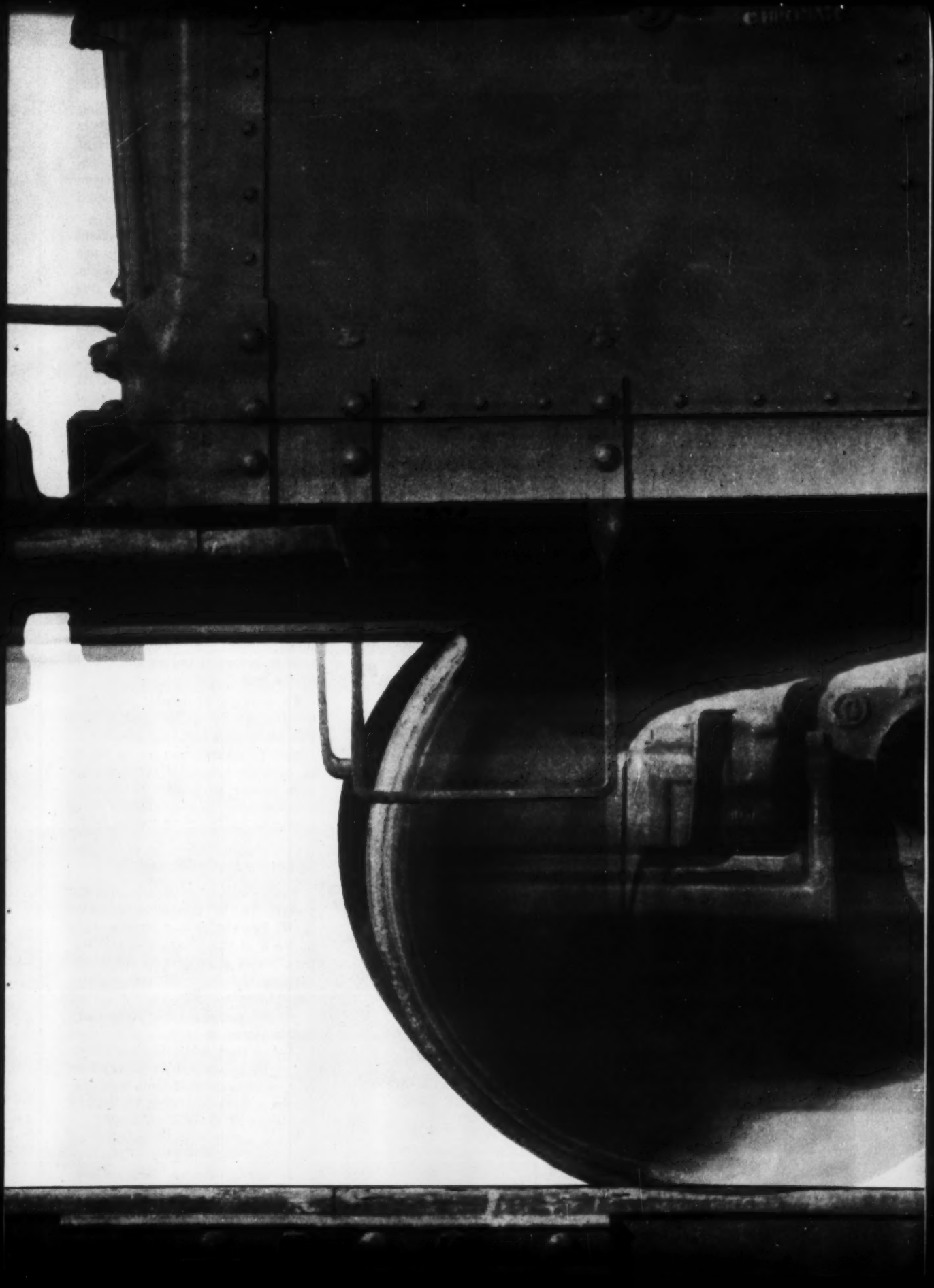

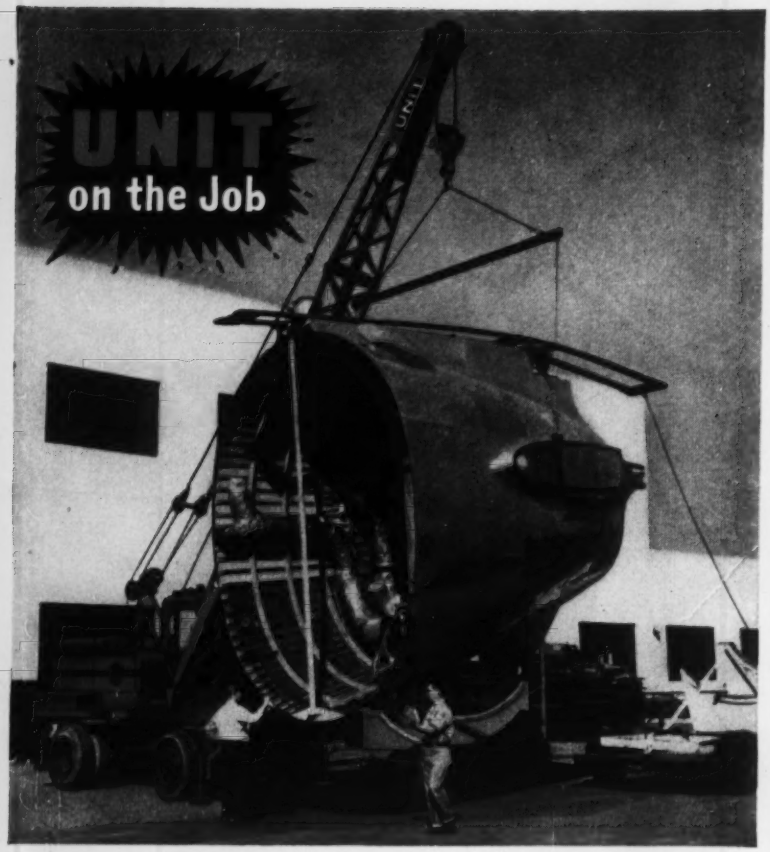

picking up a "stub"
the easy way

Typical of the powerful "pick-up" ability of UNIT Cranes is the above performance . . . loading a giant aerial "fish" or tail-stub assembly onto a truck trailer. Inside this huge stub, two jet-like gasoline heaters will be installed, with heating capacity comparable to that required to heat 12 six-room homes! UNIT torque drive provides full, steady, nonstalling power . . . greater lugging power . . . elimination of shock loads on machinery. It will pay you to investigate these and other UNIT advantages. Write for Bulletin L-302.

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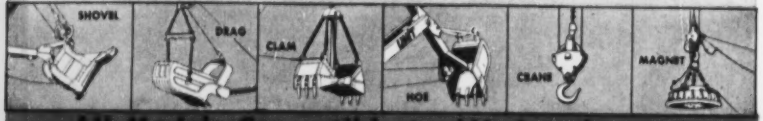
357 Mobile UNIT the ONE-engine, ONE-man Unit . . . self-propelled, travels anywhere, rides on rubber, quickly convertible, fast, reliable.

½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

Strip Annealing Tin Plate

CONTINUOUS, vertical annealing line for strip up to 38 in. wide is being built by Incandescent Heat Co., the Drever Co. English associates. The line, on order from Steel Co. of Wales, is expected to be in operation by 1956.

The strip enters the 10-stand controlled atmosphere furnace through gas-tight entry roll seals, reaching 1350° F in the first five heating passes.

Strip Equalized—Then it goes into the two-stand soak section for temperature equalization—these sections will be electrically heated with heating elements of heavy nickel-chromium ribbon resistors.

The strip is then directed through three controlled cooling passages, where temperature drops uniformly from 1350 to 800° F. Final cooling to below oxidizing temperature comes when the strip is passed through 16 vertical cooling chute sections. It leaves through gas-tight exit roll seals at a temperature of about 250° F. Two forced-air cooling-chute passes further cool the strip to about 150° F before it enters the No. 3 bridle unit.

To provide necessary time for welding, an entry and exit looper will be supplied.

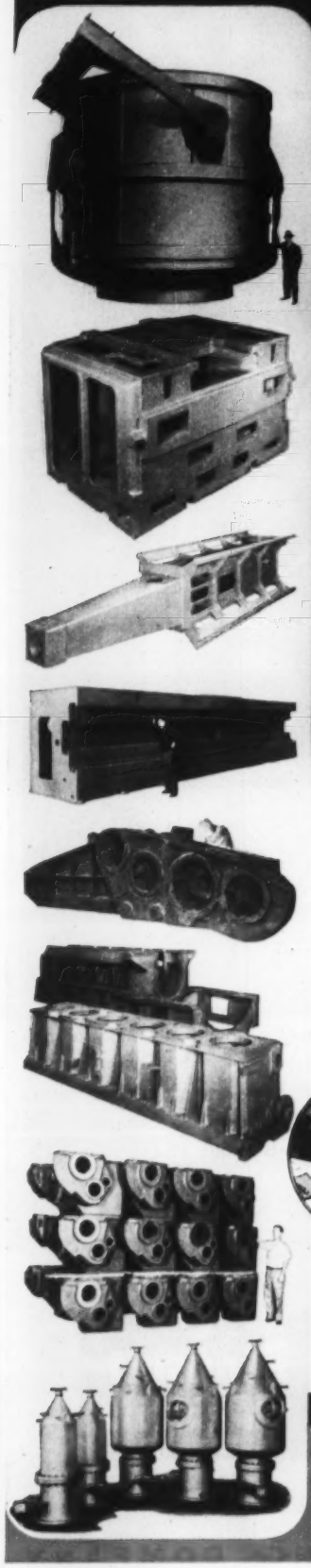
The furnace structure is 49 ft in over-all height, 8 ft, 2 inches wide center to center of furnace columns and 26 ft, 2 inches long center to center of end columns.

Structure Study Revised

The Structure of Metals and Alloys by Dr. W. Hume-Rothery and G. V. Raynor is the third edition of No. 1 of the Monograph and Report Series published by the Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.

Its 363 pages contain completely new sections on ternary alloys and alloys of iron, while the part dealing with imperfections in crystals has been extended and now includes a comprehensive account of the ideas of dislocation theory.

Book sells for $5.50 and may be obtained from the publisher or from STEEL, Penton Bldg., Cleveland 13.



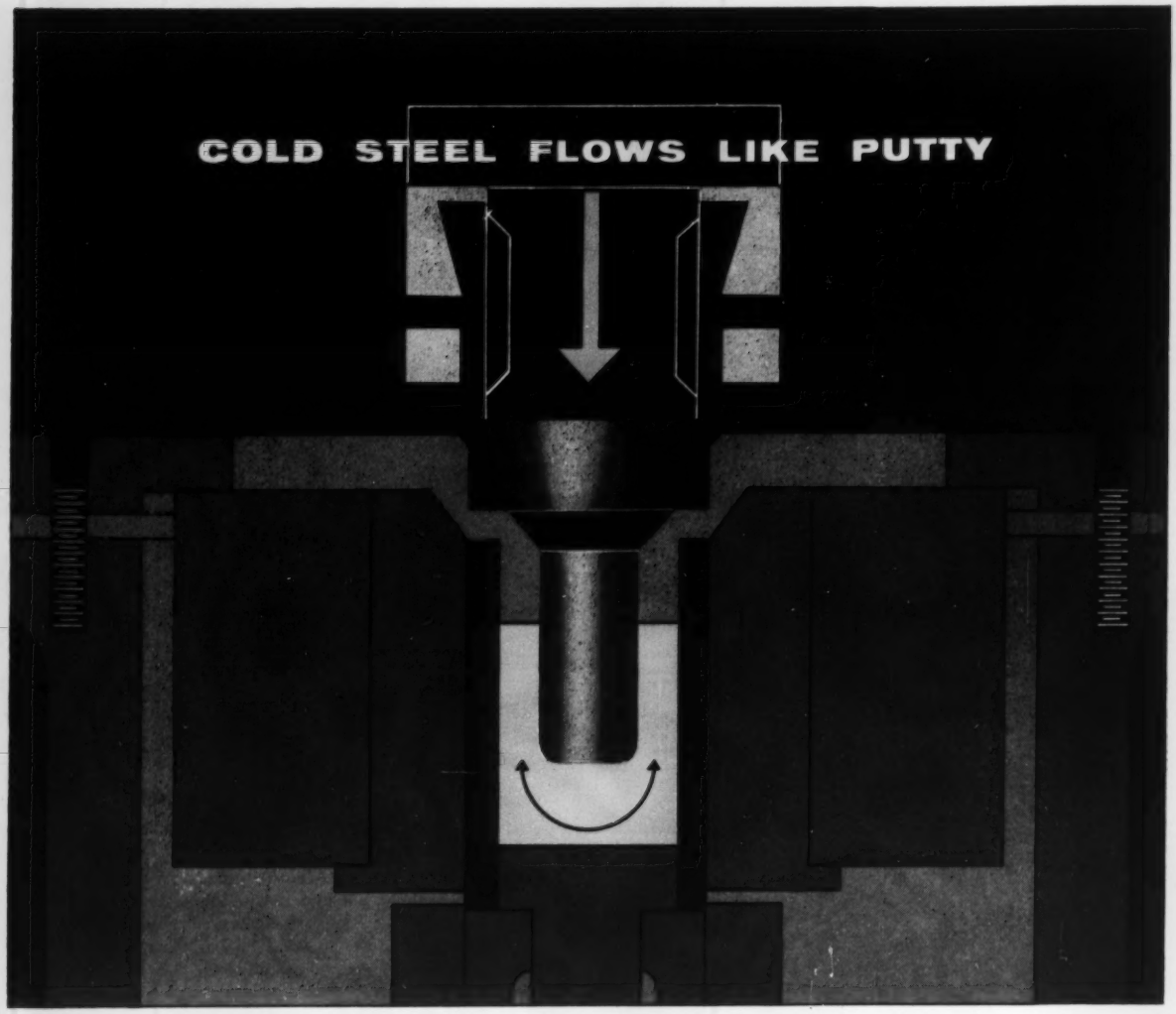
Use WELDED STEEL
for Greater Strength
with Less Weight!

The 86-foot pressure vessel illustrated above is a Stabilizer built for a petroleum refining plant. This unit and its Overhead Receiver were Steel-Weld Fabricated by Mahon in accordance with the A.S.M.E. 1952 Code. Platforms, Ladders, and other miscellaneous iron, to complete this unit in the field, were also produced by Mahon. Equipment of this type, and the products, parts and assemblies shown at the left are typical of thousands of Steel-Weld Fabricated units produced and machined by Mahon for hundreds of processing plants and manufacturers of processing machinery, machine tools, and other types of heavy mechanical equipment. Perhaps you, too, could profit by discussing this unique service with a Mahon engineer. If you require special equipment, or parts or assemblies including large, heavy pieces, where time and pattern costs are a consideration, Mahon Steel-Weld Fabrication may prove to be the answer. You can turn to Mahon with complete confidence . . . personnel and facilities are available within the Mahon plant to do the entire job from drawing board to finished machining. You will find in the Mahon organization a reliable source with ultramodern fabricating, machining and handling facilities to cope with any type of work regardless of size or weight. See Mahon's Insert in Sweet's Product Design File, or have a Mahon engineer call at your convenience.

THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN

Engineers and Fabricators of Steel in Any Form for Any Purpose

MAHON



A vital new metal shaping method is now practical with the Pennsalt Fos Process . . . tubes, shafts, cylinders, gear blanks, piston pins, and other shapes can now be cold formed in presses. This eliminates up to 80% of all machining formerly required . . . produces better parts, faster, for less.

The Pennsalt Fos Process is now being used in automotive, tube, wire drawing, and ordnance plants. The process includes a new Pennsalt lubricant and a proven method of locking the lubricant to the steel.

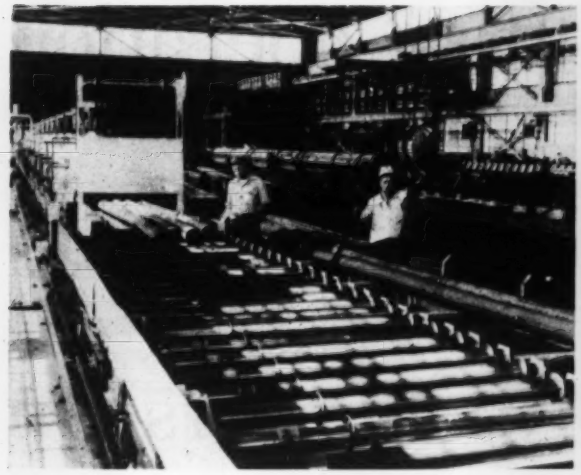
The Fos Process insures the smooth and rapid flow of cold steel through the die, even at extreme pressures.

Practically all of the original metal can be utilized with Pennsalt cold extrusion techniques . . . work cycles can be reduced . . . and over-all production speeded up. Superior physicals can be obtained from carbon steels, along with a better, smoother finish. Multiple draws without interim recoating and annealing, and greater reductions per draw are now practical.

Write today for the complete story, or send us blueprints of products you are interested in. Metal Processing Department, Pennsylvania Salt Manufacturing Company, 502 Widener Building, Philadelphia 7, Pa.

Pennsalt Chemicals

PENNSYLVANIA SALT MANUFACTURING COMPANY



Left—Inconel tubes roll out end of continuous annealing furnace. Right—Nickel alloy tube is checked with micrometer. Unique magazine loading device is shown behind the operator

Cold Draws Go Automatic

New bench can draw Inconel, Monel and nickel tubes and rods up to 85 ft, and there's no slowdown for the loading operation. Rotating magazine saves time

THE MAGAZINE LOADING device at International Nickel's new cold draw section (Huntington) takes three tubes and moves them into place on the bench while three other tubes are being drawn.

The revolving cylinder has six mandrels in sets of three, each placed one above the other. While the tubing is drawn from the lower part of the cylinder, the upper three are loaded for the next draw.

At the end of drawing operation and while the "mule" is being returned to start position, the cylinder rotates and brings three mandrels with tubes on them into position before the dies. Some tubes and rods can be drawn up to 85 ft.

Annealing—The furnace to go with the expanded set-up and its attendant equipment (charging table, cooling chamber, and discharging chamber, etc.) are 300 ft from end to end. Designed for continuous temperature controlled annealing of nickel, Monel and Inconel rods and tubes, it is fitted with 300 chain-driven rollers on which the metal moves.

Rollers inside the furnace are made of Inconel to withstand 2000° F heat without use of any cooling agents.

On the Beam—Four Leeds & Northrup regulating units, one for each of four furnace zones, control heat up to a maximum of 2000° F.

As a final safeguard against temperature variation, Brown Protect-O-Vane control units have been installed. They signal the operator when the actual temperatures differ from settings on regulating units.

No Scale — Before it goes through the jets into the furnace, gas that creates the heat is mixed with the minimum amount of air for combustion. This means burning leaves no trace of oxygen that might oxidize the metal.

Actually, Inco officials point out, this is not the most efficient means of combustion. Some gas is wasted for lack of oxygen to help the burning process. But it does guard against possibility of any contact of oxygen with the metal being heated.

Serving the draw bench is a Toledo scale with a weighing platform that is 65 ft long by two ft wide.

A new tube testing bench, that looks for leaks with inside water pressure, is 85 ft long. It is said to be the largest ever built by its manufacturer, Taylor-Wilson Co., McKees Rocks, Pa.

Costing $1,250,000, Inco says the new cold draw section will extend length limitations on rods and tubes and triple capacity for turning out heat exchanger tubes.

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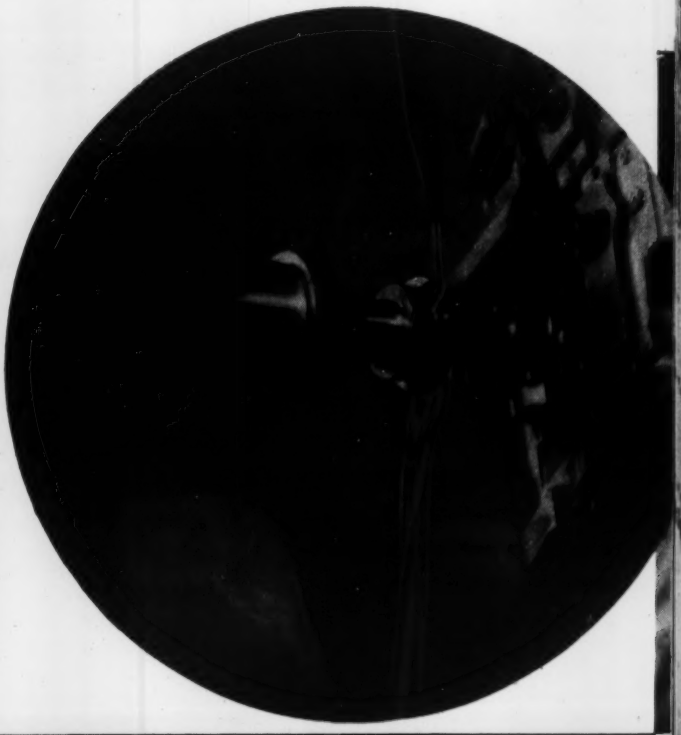
one cutting oil - GULF

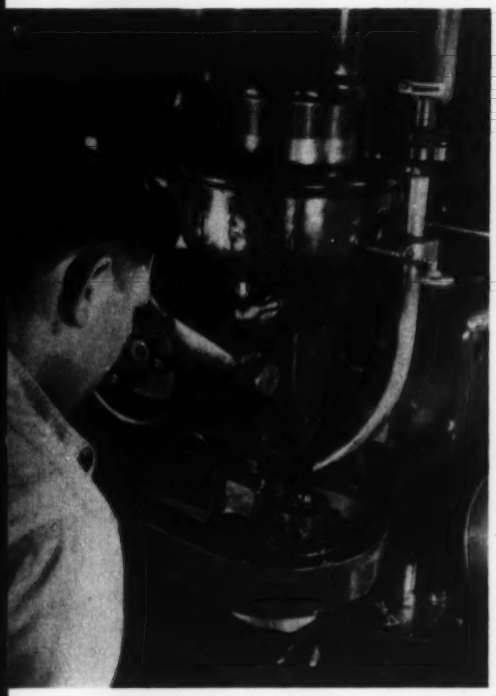
does the job for precision



on every type of steel

LASUPAR

instrument manufacturer



After careful tests on many brands of cutting fluids, the Belock Instrument Company of Long Island, New York, has found that Gulf Lasupar Cutting Oil gives them better performance over their entire range of machining operations on every type of steel they process.

It helps them produce precision instrument parts to extremely close tolerances, with excellent surface finishes and few tool changes.

Gulf Lasupar Cutting Oil has three degrees of sulphur activity—(1) extremely active sulphur held in a stable solution, (2) sulphur combined with mineral oil by a special Gulf process, and (3) sulphur combined with fatty oil. This combination means that you, like the Belock Company, will get better results on those jobs where finish, cutting speed, or tool life is a problem.

Simplify your cutting fluid storage and handling by ordering the oil that will give excellent results over a wide range of machining operations—Gulf Lasupar Cutting Oil. Contact your nearest Gulf office today for further information.

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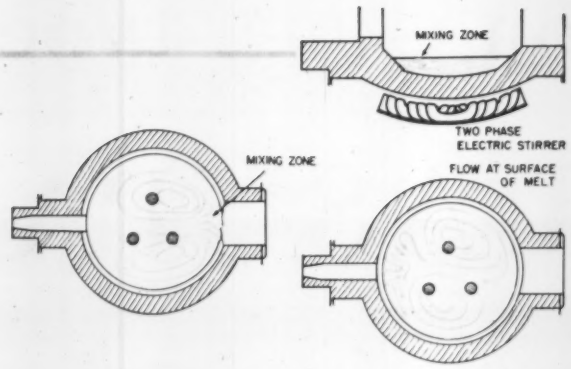


Induction Stirring Gaining Favor

INDUCTION STIRRING as applied to arc furnaces, while no longer a novelty in the steel industry, is nonetheless a little-understood phenomenon both in how it works and the advantages accrued.

Users report a saving in refining time, better yield of alloying materials and ease of deslagging, especially in big units producing high alloy steel. In principle, the traveling magnetic field is applied to the bottom layers of the melt which layers are then made to flow upward and sideward (see illustration).

Closer Look—Stirrer itself, a barge-shaped unit placed below the bottom of the furnace, is generally suspended directly from the furnace casing with a space of approximately 1 in. between the upper surface of the stirrer and the bottom of the furnace.

The traveling field can be produced by means of moving dc magnets, but it has been found more practical and useful to use static windings which, in fact, then correspond to a part of a huge induction motor stator, the melt being the rotor. The flow pattern is achieved by a two-phase winding fed by alternating currents of very low frequency.

Heat Problem — The practical solution to the problem of protecting the coils was to equip the furnace with a bottom of nonmagnetic material. The design problem thereby posed is to choose the frequency so that it is sufficiently low to avoid excessive eddy current losses in the bottom plate and sufficiently high to insure that the motive forces generated in the bottom layers of the melt are able to stir the melt thoroughly in a short time.

Low-frequency currents in the stirrer are produced by a motor generator set consisting either of two single-phase generators or of one two-phase generator driven by an induction motor. The power consumption is low. A stirrer for a 30-ton arc furnace (16-ft inner shell diameter) consumes about 115 kw at a power factor of 0.5. Total kilowatt consumption including cooling equipment and exciter, is some 180 kw. A standard stirrer for a 30-ton furnace (16 ft) weighs about 10 tons.

Simple Controls—Operation of the stirrer is simple, every phase being directed from a control panel. In addition to pushbuttons for starting and stopping the motor generator set and the stirrer, the panel contains reversing pushbuttons, temperature control equipment for the furnace bottom (all furnaces with stirrers have been equipped with continuous temperature-indicating elements, placed under the bottom of the furnace), instruments for current, voltage and so on.

Controls are interlocked so that operation is simple and does not demand skilled electricians.

Deslagging Too—Ease of deslagging in an arc furnace equipped with induction stirrer is of great help especially in those processes which require more than two slags. The stirring being arranged to create a flow of surface metal toward the furnace door, the slag is carried to the door and pushed out while the hot metal scours the furnace walls where an operator could not conveniently reach with a rake.

To a certain extent the scouring effect helps to keep the bottom of the furnace clean. The labor is done by the movement of the metal itself, and operators are glad to work on furnaces provided with this type of equipment (they are quick to report the fact, if the stirrer is shut off for any reason).

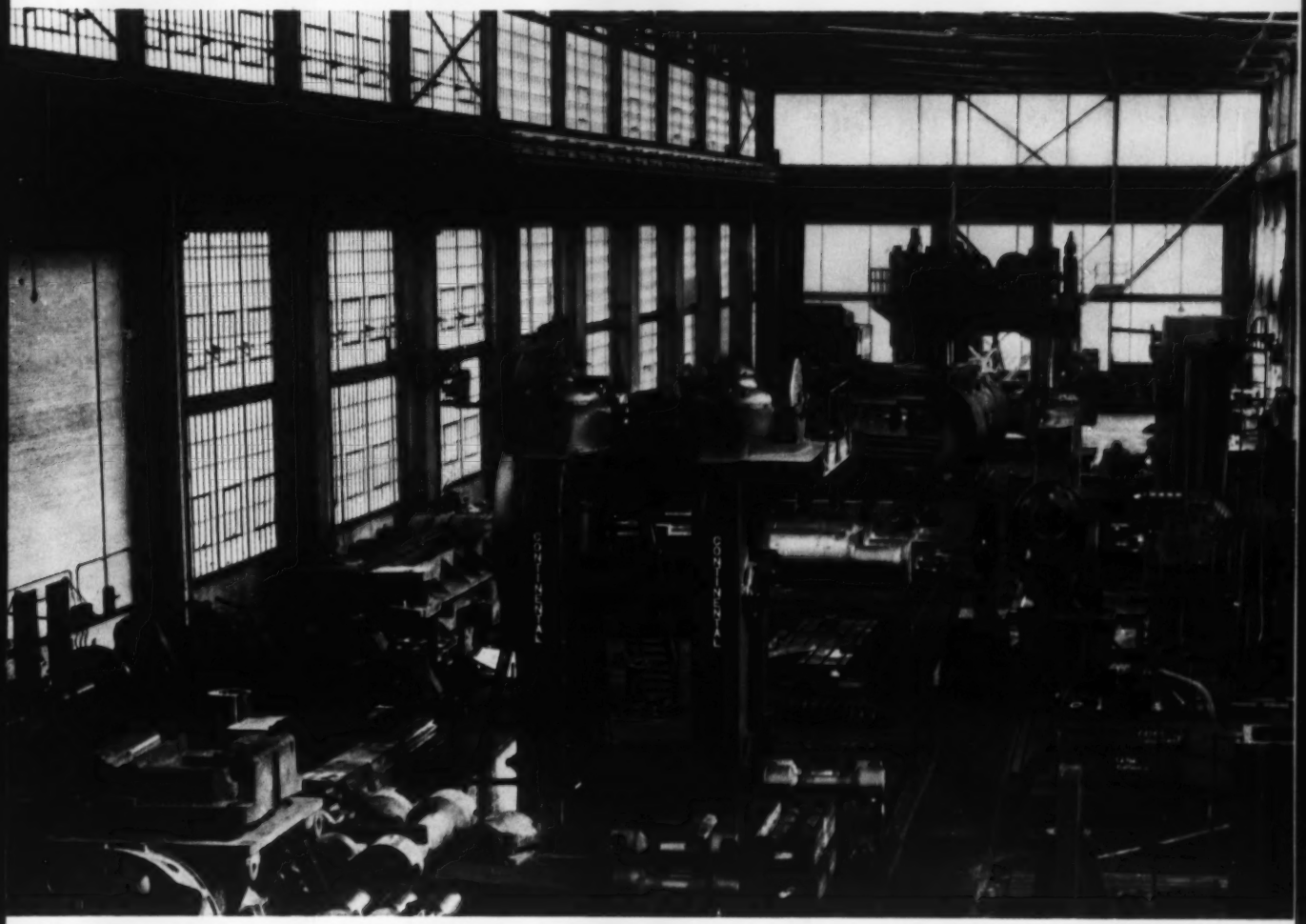
Use Cheaper Scrap — Handling large volumes of slag associated with the dephosphorization of low grade scrap is also greatly facilitated. One furnace which previously used 50 per cent low grade scrap, after being fitted with a stirrer, has turned over to 100 per cent cheap scrap with a consequent great saving in costs and improved quality of steel.

Deslagging, temperature equalization, and homogeneous analysis are the main advantages sought in an order for the largest induction stirrer to date—for a 150-ton furnace with an inner diameter of 24 ft producing mainly ordinary carbon steel—since these factors are real problems in a furnace of that size.

Since 1947, six induction stirrers have been installed in Sweden, for furnaces ranging from 12 to 17 ft in diameter. Since 1952 five have been delivered to or ordered by firms in other countries. Timken Roller Bearing of Canton and Republic Steel Corp. of Canton are each taking stirrers for 20-ft furnaces.

CONTINENTAL

ERECTING A 46-INCH BLOOMING-SLABBING MILL AND A 66-INCH TANDEM COLD STRIP MILL AT CHICAGO WORKS



Continental facilities are geared to efficient production. Chicago Works can manufacture and erect several mills at a time. Wheeling Works has similar production facilities. Close quality control is maintained at every step from preliminary engineering to satisfactory operation.

Continental builds varied types of ferrous and non-ferrous rolling mills, complete with auxiliary equipment. *For flat rolling:* slabbing, universal, plate, hot strip, cold strip and temper mills. *For shape rolling:* blooming, structural, rail, billet, rod and merchant mills.

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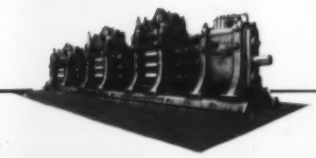

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This simple idea saves money in V-Belt Costs

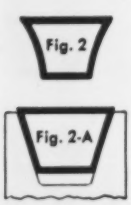
You can prove it in two minutes!

To prove how the CONCAVE SIDES of GATES VULCO ROPES *save money*, just make this simple test—

Bend *any* V-Belt that has *straight sides* (Fig. 1) and—as the belt bends—*feel* the sides *bulge out* (Fig. 1-A). This out-bulge concentrates the wear at the points shown by arrows—and this naturally shortens the life of a *straight-sided* belt!

Now bend a Gates Vulco Rope with CONCAVE SIDES (Fig. 2)

(U. S. PAT. 1813698)



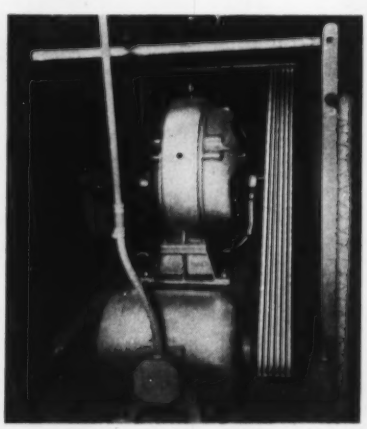
You find that the CONCAVE SIDES *fill out* and become perfectly straight. They thus press *evenly* against the V-pulley. All wear is distributed *uniformly* across the *full width* of the GATES VULCO ROPE—and this means *longer* belt *life* and *lower* belt *cost* for you!

When you buy V-Belts, be sure to get the V-Belt with the CONCAVE SIDES—the GATES VULCO ROPE!

VULCO ROPE DRIVES

THE GATES RUBBER COMPANY
DENVER, U.S.A.

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and Canada, and in 70 other countries throughout the world.



Typical Gates Vulco Rope Drive—the Gates V-Belts are built with Concave Sides to insure longer belt wear.

CS-548

AISE Abstracts

Power and Control Cables for Steel Mills

E. D. Youmans—Preferred practice in most steel mills is to install high-voltage power cables underground. While more costly than overhead construction, there are several advantages for underground installations, including less susceptibility to damage by cranes, fire, lightning and wind storms and other causes. Underground cables are less likely to be an obstruction or occupy space needed for other purposes.

Oil impregnated, paper insulated, lead covered cables are generally used for high-voltage, underground power circuits. The lead sheath should have a corrosion protective covering preferably made with neoprene. Lower cost as compared with rubber insulated or varnished cambric insulated cables is an important advantage in favor of paper insulated cables. Non-leaded rubber insulated cables are often used where skilled splicers for lead covered cables are not readily available.

Rapid Method of Relining a Blast Furnace

B. Vezzani—The paper discusses the rapid relining of the No. 1 blast furnace of the American Steel & Wire Division at Donora, Pa., in July of 1953. This mantle-up relining was accomplished in 15 days, 9½ hours from blast-off to blast-on and entailed close planning and the co-operative efforts of all the various divisions that were involved.

A brief description of the early planning and the proposed repairs is given. The proposed methods of procedure and the preparations for the relining are described.

A day-by-day log and detail of the relining is given in outline form as well as a recapitulation of all the work performed either by contract or by the American Steel & Wire Division.

Re-Use of Industrial Cooling Water—Why and How

H. E. Degler—Selection of wet-bulb design temperatures, water cooling "range," and "approach" to wet-bulb are discussed, as well as cooling tower application in steel and related industries.

Design factors are given for water-cooling equipment. Towers provide compactness, large capacity, flexibility, and all-around water-cooling performance for greater economy. Paper discusses various types of recent equipment from the modern hori-

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puts your metal cleaning in-line for lower costs

Today with specialized Detrex equipment, *all* your metal washing and degreasing operations can be performed right in sequence on your production line. Regardless of the size of the work, the type of soil to be removed or the kind of cleaning required, Detrex can provide a unit exactly for the job.

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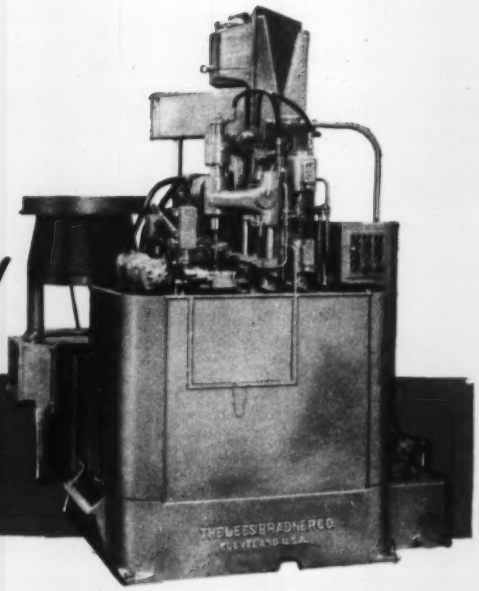
Automation is here ...from blank to gear!



MODEL 7-A "AUTOMATIC" SINGLE-SPINDLE HOBBER

3" diameter, single-start hob
Runs at 350 R.P.M.
Feeds at .050" per revolution
Hobs two pieces per load

Hobs one gear every 45 seconds
16 teeth in gear
Face width of gear: ⅝"
Loading and unloading time: 2 seconds

The famous Lees-Bradner 7-A single spindle hobber has now gone completely automatic!

From blank to finished gear the whole operation is "push-button". Here's how it works:

Blanks are fed from a Syntron Vibratory Feeder down a rack to an automatic pick-up arm or loader.

The loader picks up two blanks at a time and moves them to the hobbing position under an expanding mandrel. The mandrel holds the blanks while the hob moves forward automatically to commence the hobbing operation.

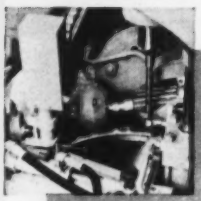
After the gears have been hobbed they are ejected by the loader as it sets the next two blanks in hobbing position.

As a control measure, the machine will not operate if:

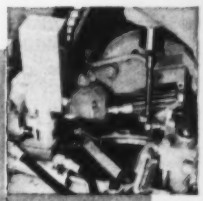
- **The blanks are not in the loader**
- **The blanks are not removed from the arbor**
- **There is not sufficient hydraulic clamping pressure**

In the operation pictured the machine is hobbing a pinion gear for an automatic transmission.

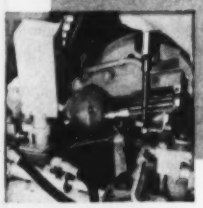
Write to the company for details on this amazing new automatic hobber.



1. Arbor retracted ready for loading.



2. Loader arm moves to right with 2 blanks.



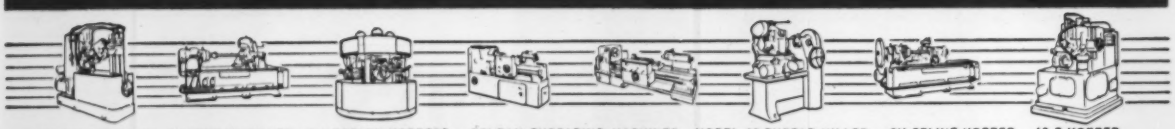
3. Loader about to eject finished gear from under mandrel.

4. Blanks held in place by mandrel ready for hobbing operation.

The Lees-Bradner 7-A Automatic Hobber is available in single units or quadruple mountings. (4 machines in line with common base, coolant tank, master control and feeder.)

The LEES-BRADNER Company

CLEVELAND 11, OHIO, U.S.A.



MODEL R HOBBER · HT THREAD MILLER · 7-A ROTARY HOBBERS · CRI-DAN THREADING MACHINES · MODEL 40 THREAD MILLER · SH SPLINE HOBBER · 12-S HOBBER

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zontal packaged wood-filled type (5 gpm capacity) to high capacity double-flow induced draft units. Selection, performance, testing, operation and maintenance of water-cooling equipment are given.

Chemical advantages of cooling towers are discussed for plants on contaminated streams, considering that clean water leaves no corrosion or deposits, organic or mineral, in equipment serviced.

Curves show water-cooling tower performance vs. approximate cost, as related to water gpm, cooling range and approach.

Developments in Extending Blast Furnace Stack Life after Appearance of Hot Spots

R. W. Sundquist—Developments over the 1951-53 period evolved into the following four-point program:

1. Detection of incipient hot spots —Temperatures of the furnace shells are checked weekly by contact pyrometer. Temperatures of 200° F are regarded suspiciously and call for more frequent checks; while rising temperatures require closer inspection by core-drilling.

2. Installation of shell sprays, augmented at times by insertion of a steam lance through a core-drill hole —This serves to protect thin linings and promotes the build-up of a protective coating.

3. Pumping grout inside furnace shell—1¼ by 6-in. nipples with stop cocks are welded on the furnace shell in a pattern that will provide maximum coverage of the hot spot area. With the blast on, air-setting cement, mixed with water, is pumped into each of the nipples.

4. Installation of dovel type cooling plates—Plates are used when other corrective measures have failed and a section of the original lining has completely disappeared. The outline of the area is determined by temperature gradients and small test holes burned in the shell. During the three year period, 1951-1953, nine stack linings were prolonged for an average of 13½ months, with a maximum of 21 in two cases and a minimum of three. The additional tonnage of pig iron obtained justified the expense and effort involved.

Controlling Losses From Fire

C. V. Batley—The more important fire hazards in the iron and steel industry include congestion, considerable combustible construction in older plants, the presence of flammable oils and gases coupled with numerous

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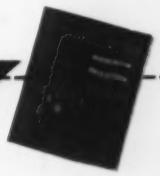

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We can get more copper than we now have. Although industry and government have been consuming more copper than in any previous peacetime period, production has kept pace with this increased demand. And producers are not working at full capacity!

More copper keeps on coming. Eleven major new projects in the U. S. will start producing in the next 3 years. These mines will add 250,000 tons to our annual production—more than *¼ of all the domestic copper mined during 1953.* In addition, recent improvements in mining techniques now make it possible to obtain copper from ores considered commercially unworkable in the past.

Copper is virtually indestructible. At least 3 out of every 4 pounds of copper used in today's products, when scrapped, can be re-used in the future. Every day we are adding to our "copper capital". The more copper we use . . . the more we have!

Copper or its alloys provide these advantages . . .

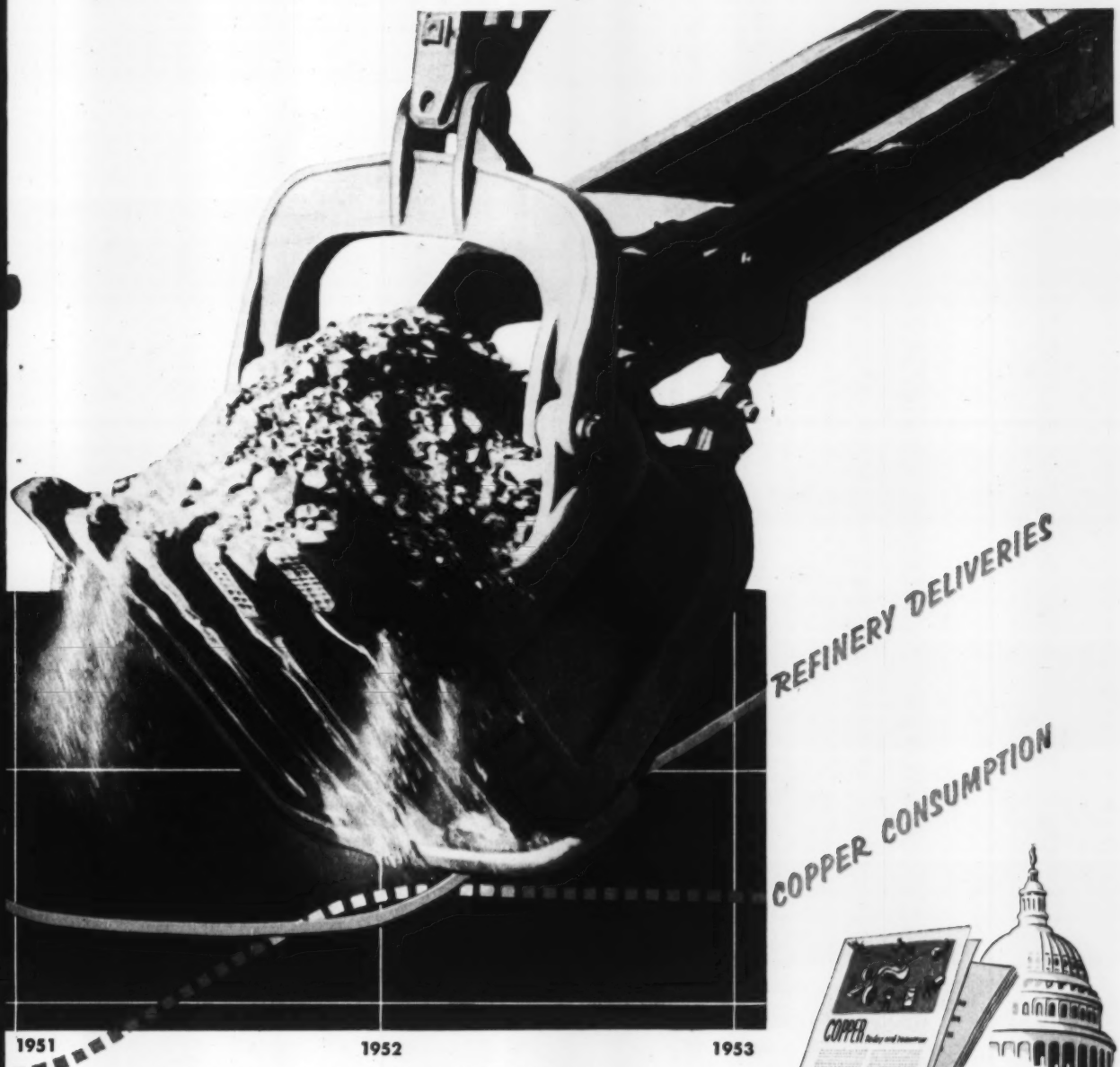
Best conductor of electricity commercially available.

Does not rust . . . high corrosion resistance.

Best heat transfer agent of all commercial metals.

Easy to machine, form, draw, stamp, polish, plate, etc.

Welds readily . . . excellent for soldering and brazing.



Source—American Bureau of Metal Statistics Year Book 1953

❊ ***"Copper . . . is fortunately available in ample supply to meet any foreseeable demand"***

Foreword, U. S. Dept. of Commerce
B.D.S.A. Copper Quarterly, August 1954

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(1.25 ounces of pure zinc per square foot of metal, as per ASTM standards.) Kinnear Paint Bond — a hot phosphate immersion assures thorough, lasting paint grip.

Smooth, easy coiling upward action saves time and labor.

Ideal for motor operation; remote control switches if desired.

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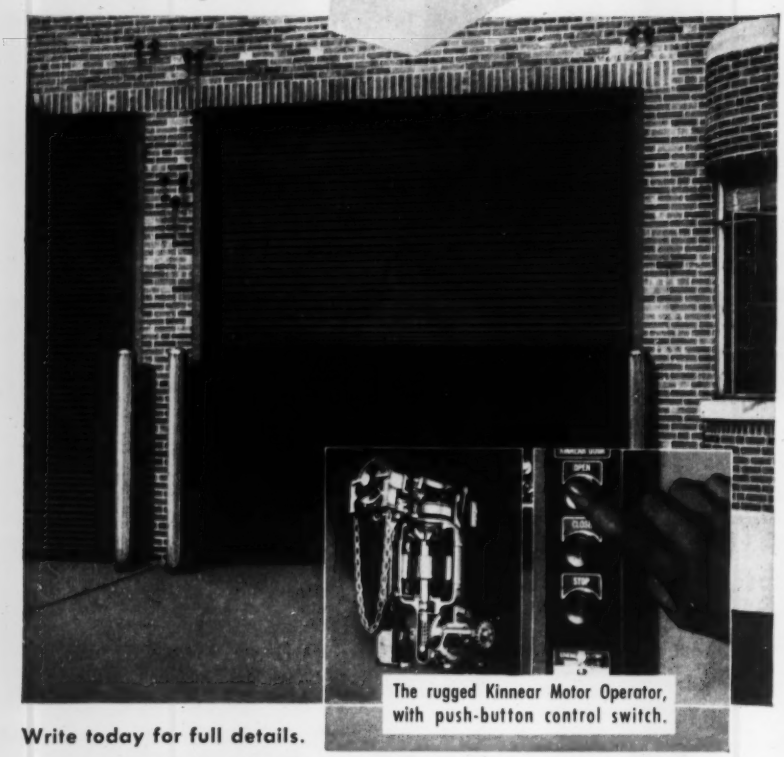

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large heat producers, the generation and use of electricity, and numerous spot hazards such as woodworking shops and coal tar by-product plants.

The iron and steel industry is carrying on programs to control these hazards. They vary in detail but, where successful, they fix authority and responsibility for the program on some specific person and have four fundamental features in common: (1) Knowledge of the potential and possible fire hazards, (2) detection of the fire hazard, (3) selection of steps to correct or control the hazards, and (4) application of those selected steps.

Co-ordination between those responsible for fire protection and the various engineering, operating and maintenance groups has resulted in the elimination or control of many fire hazards.

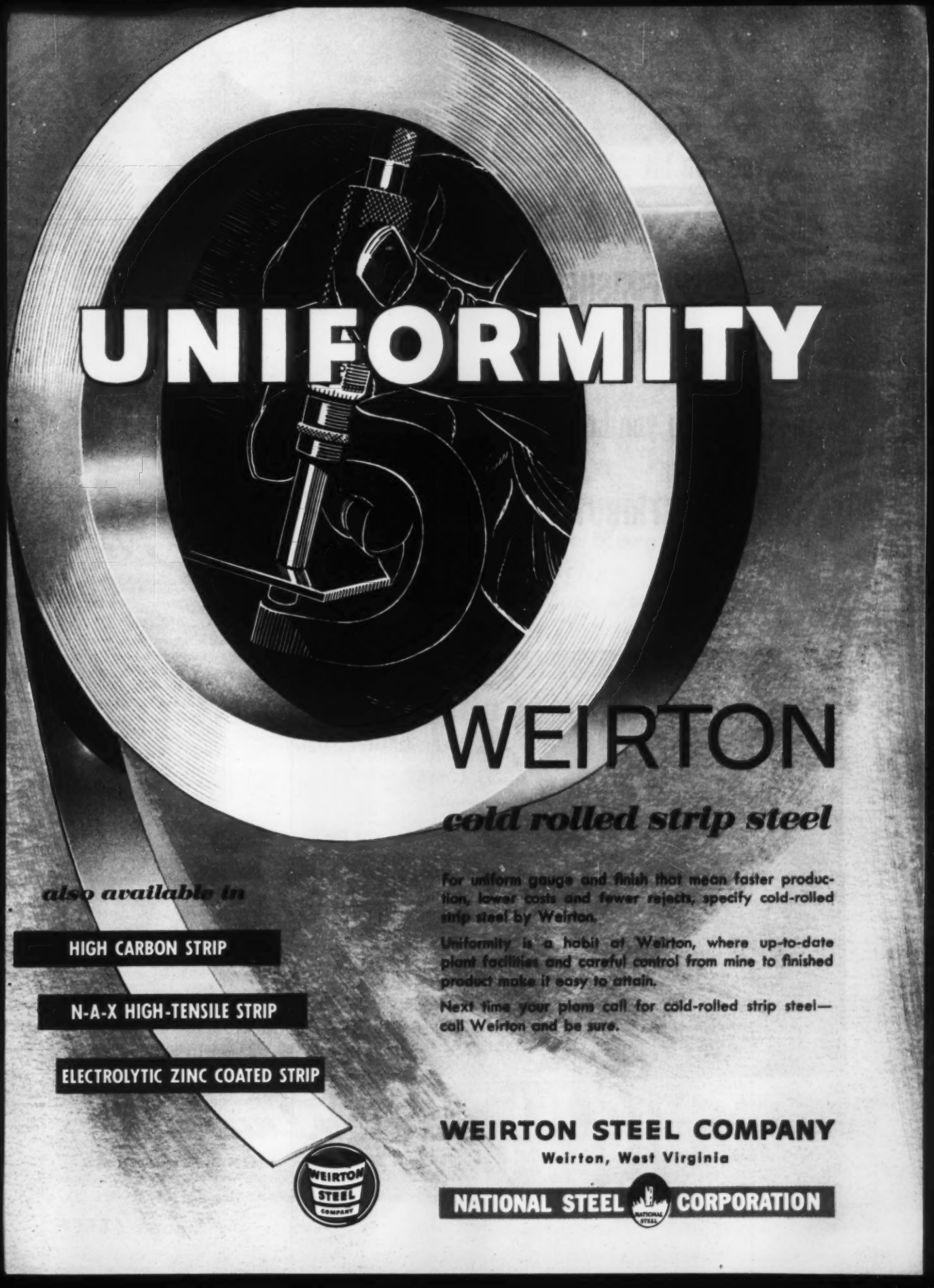
Some Aspects of Open Hearth Waste Gas Analysis Control

F. P. Hubbell—A brief discussion is given of the equipment used and difficulties experienced with a trial waste gas analysis control installation on a 225-ton basic open hearth furnace. A new design installation utilizing improved equipment is described. It is pointed out that an open hearth waste gas analysis control cannot give the type of control accuracy normally expected in the control of temperature, flow, pressure, etc. The factors affecting control ability at the various stages of an open hearth heat are briefly outlined.

Combustion air flow records with and without the control in service are shown, and improved furnace roof life is reported during furnace campaigns with the control in service. Factors affecting open hearth furnace roof life and heat time are discussed, and it is indicated that furnace refractory costs may be the major benefits possible from the use of a waste gas analysis control.

Improvement in High Capacity Industrial Third Rail Systems

H. Y. Mageouch—The paper covers third rail systems for industrial applications from 300 to 1000 amperes capacity, with part of the discussion covering the use of aluminum for the conductor member with associated components designed to produce an integrated type system having improved electrical characteristics, space saving features and reduced maintenance. The system, when used with suitable insulators, may be employed for voltages up to 4160 volts.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The basic system may be converted into an enclosed or protected system by employing standard enclosure components. Some comment will be made on development testing and observations during test.

Other improvements in third rail systems will be shown in the form of a system employing fixed contacts with movable rail sections. This system represents a new idea in the field of current transfer methods for moving equipment and, while different, it may offer the solution to problems now difficult to overcome.

Rate of Heat Absorption of Steel

F. S. Bloom—The purpose of this paper is to present a simplified method by which the heating rate of steel billets and slabs can be predicted with reasonable accuracy and without difficult, laborious calculations. The paper shows the relationship in two steps:

1. The temperature distribution between surface and center temperature of a piece of steel while being heated within an industrial furnace.
2. The rate of heat transfer to a piece of steel under conditions of varying furnace temperature and varying steel surface temperature.

It is believed that if one factor is known, either furnace temperature or steel surface temperature, the other factor can be calculated so that the cause for poor furnace performance can be predicted and means taken to correct such conditions.

Ferromanganese Additions in Open Hearth Steelmaking

R. Tietig Jr.—The paper describes the general design of a mechanism known as a ladle addition feeder and results from its use. This mechanism allows a considerably greater amount of manganese to be added to the ladle in open hearth steelmaking than is regarded practical by many operators. The basic design features that give this result are the ability to control the rate of making the addition and provisions for making the addition at the correct location in the ladle. Units incorporating these features have been installed in the recently constructed plant of the Lone Star Steel Company. Operating results at that plant are submitted. These results show the following advantages to be obtained from using the feeders compared with conventional open hearth practices:

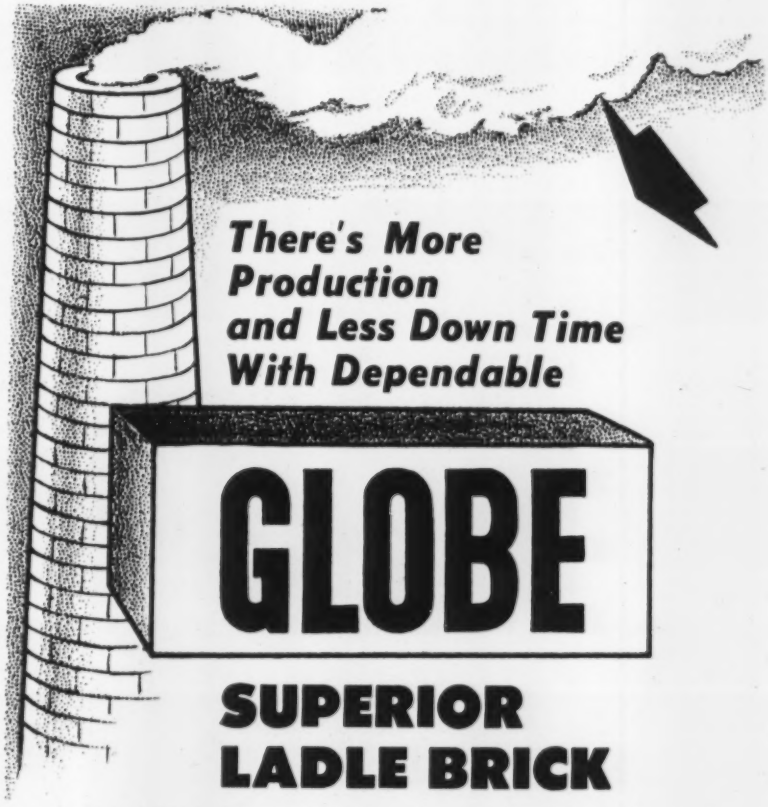
1. Manganese consumption can be reduced because the yield from a ladle addition is greater than from a furnace addition of manganese.
2. Manganese additions can be calculated somewhat lower and not result in an increased number of missed heats on the low side.
3. The manganese spreads from ladle tests at first, middle and last ingots are reduced.

The advantages have a monetary value of $0.10 to $0.30 per ton of ingots depending on the grade of steel being produced.

What Type of Grease for that Application?

W. A. Magie II—Performance, simplification, and cost are the author's three most important considerations in selecting the proper type of grease for each steel mill application. No particular type of grease is favored—such as calcium, sodium, lithium, barium or bentone, nor is it felt that an all purpose or multi-purpose grease for steel mills is yet practical or economical.

Four distinct soap type of greases are suggested to properly cover the solid lubricant requirements in steel mills with winter and summer grades in each case. We have all weather or multi-grade motor oils, but to date the use of high viscosity index oils and viscosity index improvers in



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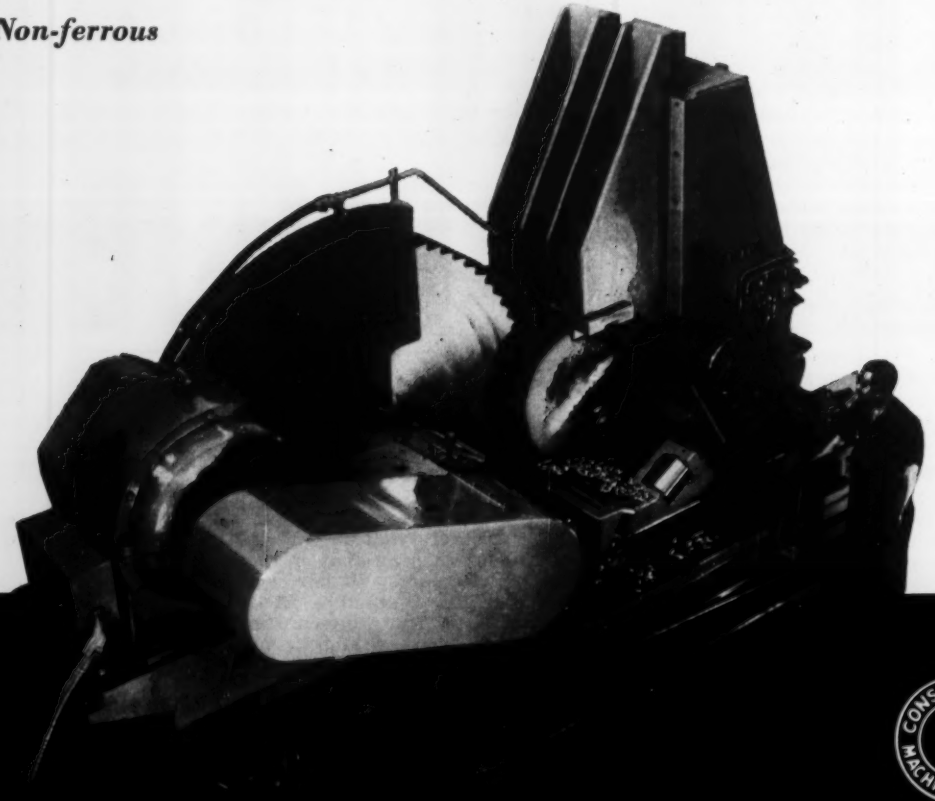

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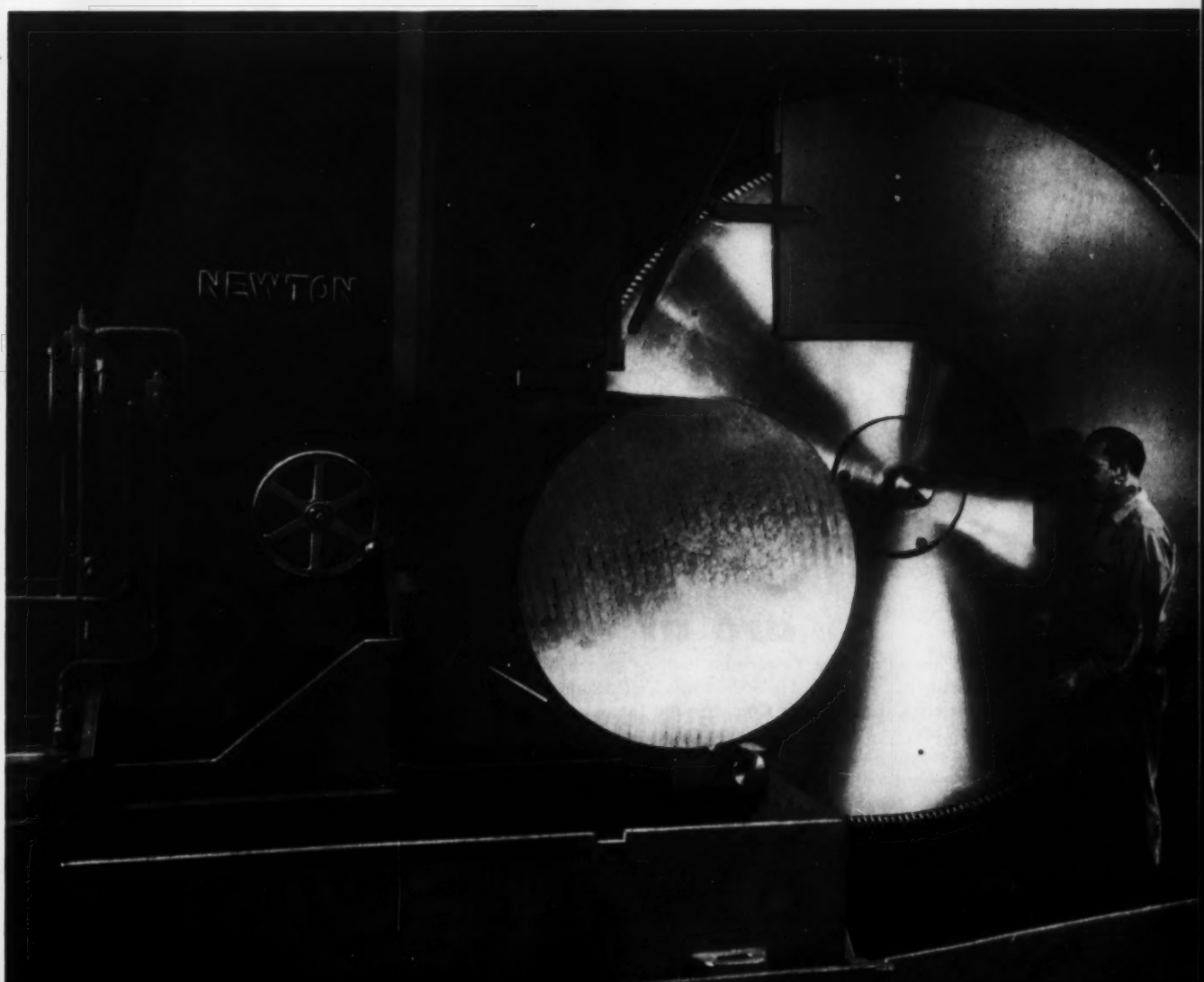

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AISE Abstracts

grease has not accomplished the same end result. Any thermoplastic material such as grease is affected by temperature changes in degrees of plasticity or body against an oil in degrees of viscosity.

Modern Techniques of Lubrication Applied to Old Mill Equipment

E. G. Weimer—The author has written this paper from the point of view of the maintenance organization of a plant, which is endowed with two old primary mill units. He points out that old equipment needs minor redesign to provide for application of modern lubrication techniques and equipment. He then reviews the method of attack used to improve maintenance cost and reduce delays on these mills.

The paper covers such items as materials and lubricants used on table lineshaft bearings, bearings of table rollers, mill pinions and bearings, etc. Some highlights of the paper are the description of a novel spray lubricating method applied to roll neck bearings of the reversing mill, the description of revisions in construction of mill pinion housings to provide for modern pinions and lubricants, and the problems faced in education of old time millwrights. The paper is illustrated with slides covering the primary points of interest.

Bearing Maintenance for Economy

J. A. Toth—Economy can only be related to bearing applications when continuous operation or performance for maximum service life expectancy is obtained from the bearing.

To make a life prediction for antifriction bearings, it is necessary to evaluate the conditions of operation in terms of their effect upon the bearings. Many factors which enter into this problem are: Load, speed, conditions of smooth or shock operation, corrosion influences, accuracy of members adjacent to the bearing, temperature, and particularly lubrication. These factors may be easily formulated in many cases, while others present greater difficulties.

Abnormal load conditions and improper fitting practice will very rapidly reduce the bearing service life. A condition of misalignment in the application will not permit the applied load to be carried by the whole bearing so that related increased stresses on the bearing elements will introduce premature fatigue and ultimate failure.

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Jet Propelled!

Last Saturday night a couple of young bucks went out to see if they could rustle up a couple of chickens for Sunday dinner. Just as they were coming out of the coop with a pair of plump pullets, the owner appeared with his rifle in hand. Seeing the farmer, the fellows dropped the birds and lit out down the road. As they did, the farmer leveled his gun and shot.

A couple of minutes later . . . five or six miles down the road . . . the boys slacked up a bit. "Man, did you hear that bullet?" one asked the other. "Hear it?" the other replied, "I heard it twice . . . once when it passed me and once when I passed it."

Haste in this instance was decidedly essential . . . but when it comes to making a better dolomite, the J. E. Baker Company does not sacrifice quality for speed. Baker's MAGDOLITE, the original dead-burned dolomite, is constantly checked to be sure steel producers get only properly burned, grain-sized particles. A superior lining that lowers refractory costs, increases furnace efficiency, resulting in more uniform ingots.

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AISE Abstracts

Antidotes for Sleeve Bearing Failures

A. F. Kaminskas—The paper carries a short introduction to sleeve bearings with a brief dissertation outlining the important chronological contributions and advancements made by the sleeve bearing industries.

Design to prevent bearing failure—Bearing design techniques are briefly outlined with a few remarks about the various conditions investigated before a set of recommendations are finally set. Factors such as bearing crush, bore distortions, clearances, operating temperature, bearing alloys, and housing materials are mentioned and how each in itself constitutes a separate study in the design of a sleeve bearing.

Bearing failures—The last part of the paper dwells particularly on typical sleeve bearing construction with the main emphasis of this part of the paper devoted to sleeve bearing failures. A discussion accompanies each illustration.

Conclusion—In the conclusion are found a few comments about what can be expected in the way of bearing life and illustrations of bearings which have performed satisfactorily.

Continuous Casting at Atlas Steels Ltd.

J. F. Black—Describes the first commercial installation of a continuous casting machine for steel in this continent. A moving picture will also show actual operation of the machine which seems destined to at last take its place in the forward development of steelmaking.

Equipment can function as an auxiliary in the large steel plant. It is no longer limited by casting sizes, and present techniques make it a feasible and proven matter in casting large slabs. Similar techniques and improvements in cooling facilities make the machine an instrument for high speed casting of billets down to two inches square.

It provides for the small producer, flexible billet making capacity at relatively low capital cost and moderate operating expense. It is equally adaptable to the casting of carbon or alloy steels.

Hot Skin Scarfing with a Mechanical Bloom Turner

A. B. Glossbrenner—By far the most interesting comment about our new scarfing method has been the result obtained. Manpower was reduced about 50 per cent and production for this particular scarfing operation

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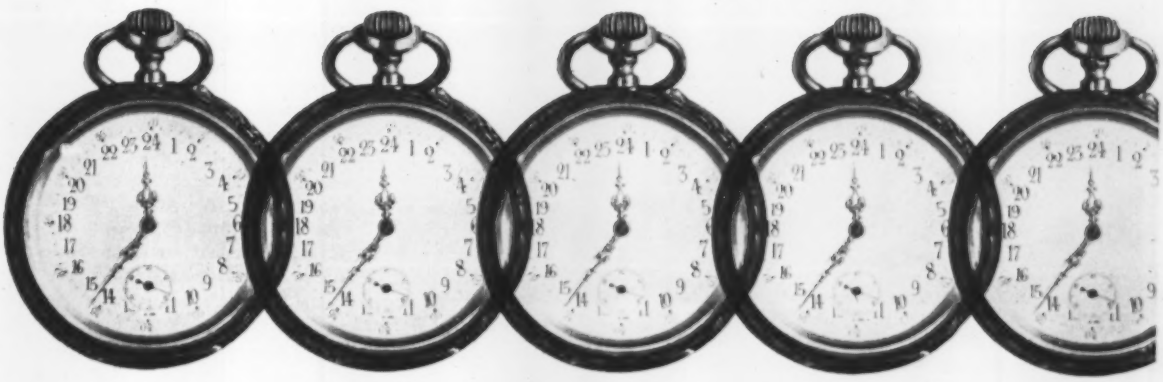

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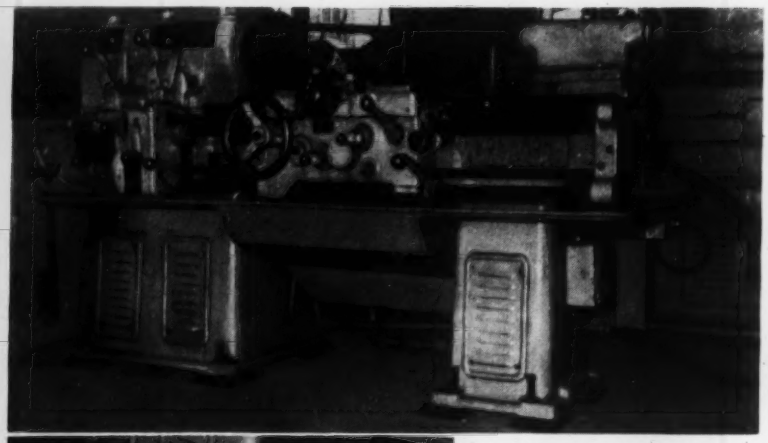

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was increased by two-thirds.

The reduction in manpower was accomplished by the design and installation of a simple mechanical bloom turner. Scarfing slag was made more easy to handle by the conversion of the crane to floor control operation. The roof was raised and the building expanded slightly to allow an 18,000-lb capacity lift truck to move steel from the heating furnace to the turning machines. One helper for the entire operation proved sufficient to keep steel moving and slag cleaned up.

The scarfing torch was replaced by a larger torch to permit faster metal removal in fewer passes to a bloom with satisfactory results.

Causes of Roll Breakage

C. F. Peck and F. T. Mavis—This paper presents the second phase of the study of fractured iron work rolls being carried out at Carnegie Institute of Technology under the joint sponsorship of AISE and RMI. In the first paper, a method of analysis was presented which gave the temperature stresses in a hypothetical roll. This work, which was reported at the 1953 Fall meeting of AISE and appears in the June 1954 *Iron and Steel Engineer*, is extended to find the temperature stresses in a real roll at any time after start of rolling. The solution is based on roll temperatures measured at Bethlehem Steel Corp., Sparrows Point, Md.

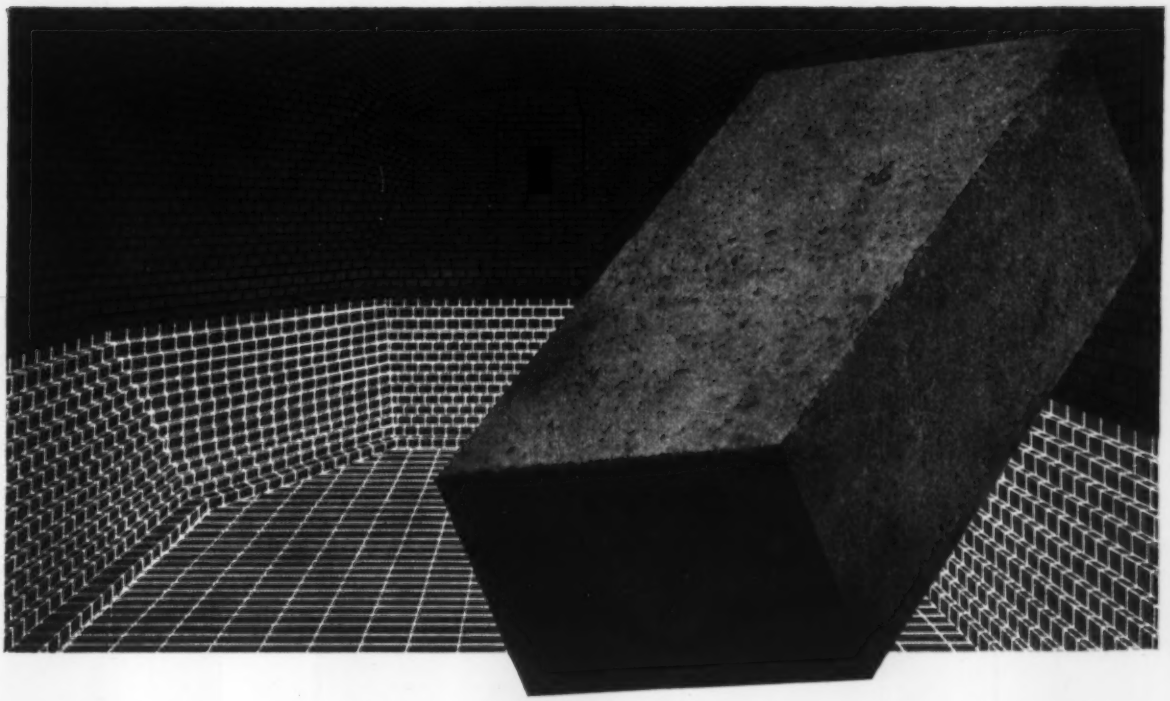
Stresses in the same roll which are set up by the mechanical work of rolling are also given. The pressure stresses at the point of contact between strip and roll and between back-up roll and work roll are determined analytically as are the bending stresses. Stresses within the work roll have been analyzed photo-elastically.

A Power Plant Report to Management

S. A. Nelson—How many engineers prepare an annual report to their company's management on the operation of their power plants and consumption and cost of utilities? Those who do not probably wonder why they should since their plant produces all the steam, electricity, compressed air, refrigeration, or other services needed.

Perhaps this question can best be answered by asking four other questions and replying to them.

1. Why keep records and make re-



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MAJOR STEEL COMPANY ceramists have found that Permanente Periclase D-S Brick meets their requirements for the safest, most efficient sub-hearth refractory.

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Permanente Periclase D-S Brick has been *designed especially* to withstand conditions that exist in the sub-hearth and up to the slag line. It is made from pre-shrunk, accurately-sized Periclase grains derived from sea-water magnesia and has all the properties outlined by ceramists as most desirable.

Among these properties are:

High MgO—Contains more than 95% MgO (165 pounds of MgO per cubic foot of brick).

Chrome-free—Eliminates the reduction of chromium oxide when sub-hearth brick is in contact with molten pig iron or high carbon steel. Under these conditions, chromium would be absorbed by the bath with resultant damage to the refractory structure. Carbon monoxide generated during a heat penetrates to the sub-hearth and also reduces chromium oxide in chromite-bearing brick. (Brick contains only 0.8% Cr_2O_3).

Low iron oxide—Minimizes the effect of alternate oxidation and reduction of iron oxide and other iron compounds which can cause damage to refractory brick. (Brick contains only 0.6% Fe_2O_3).

Low calcium oxide—No refractory damage caused by slaking during a slow heat-up or while the furnace is idle. (Brick contains only 1.2% CaO).

With all its many advantages, Permanente Periclase D-S Brick gives you the ultimate in sub-hearth safety and durability—yet costs no more.

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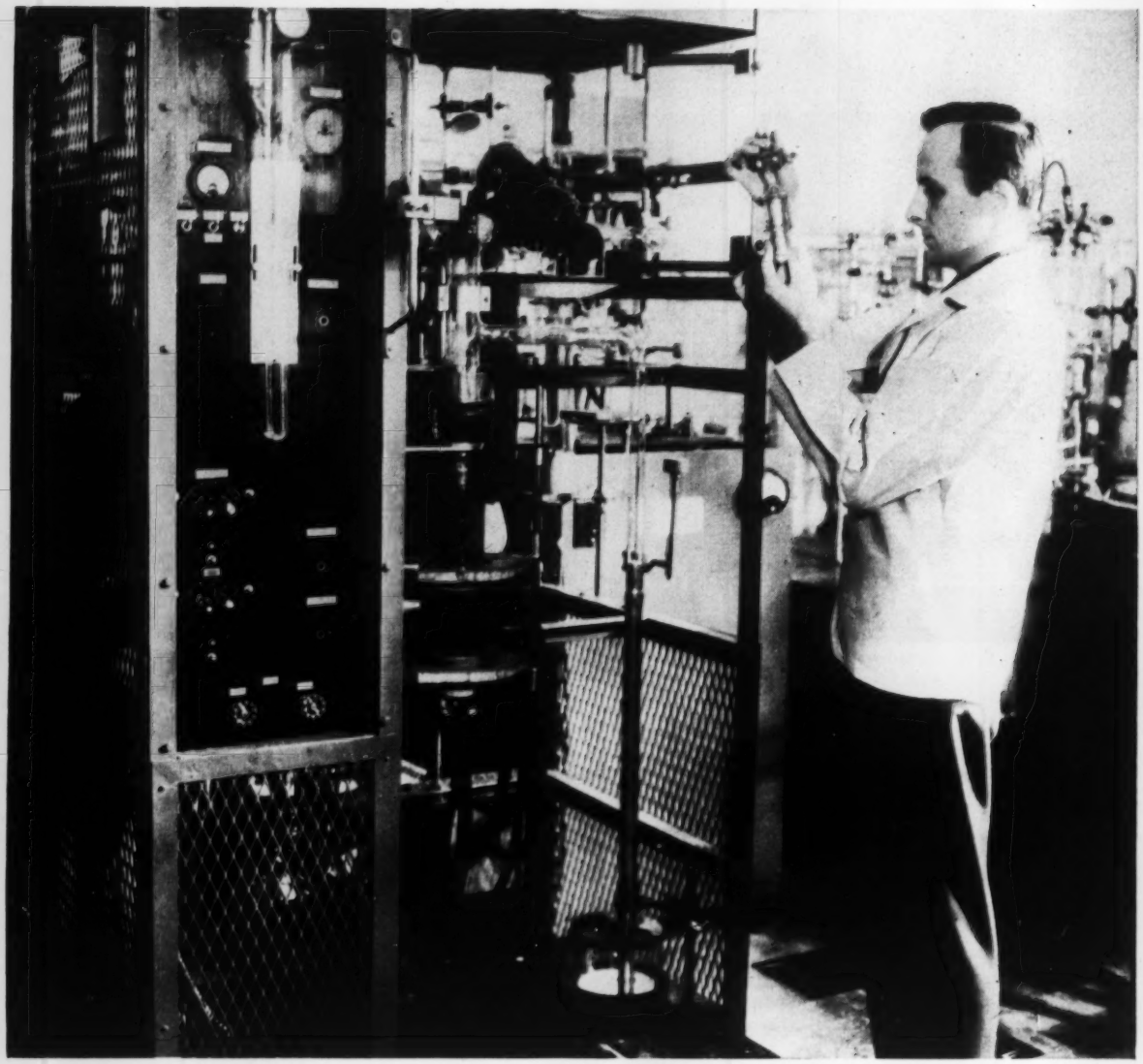

They search so that you may find

The technician above, in the last-word Research Laboratory recently built near our Brackenridge, Pa., plant, is running an involved analytical test on apparatus of our own devising—developed because we wanted more accurate answers on special alloy steel problems than we could get in any other way. In all of the A-L plant laboratories, the hunt for alloy steels of improved properties and greater value is always at full speed, so that *you* can have the materials you need to cut your costs or improve the competitive position of your products. ● Whenever you're trying to take a step ahead in resisting corrosion, heat, wear or great stress, or in securing special electrical characteristics, call on us. ***Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.***

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ports?—Records and reports are a means of knowing how well operations are being carried on and what the costs of the various services and utilities are.

2. What should go into reports?—Only the minimum information that is necessary for guiding the operation and maintenance of a power plant or using the utilities to best advantage should be included.

3. When should records and reports be available?—In order to be of most value in guiding operations, records and reports should be available as soon as possible after the data is taken.

4. What should be done with them? Train people to know what the recorded data means and what they can do to correct poor operating conditions noted thereon. The engineers should study the results to determine what economies can be effected.

One must not lose sight of the fact that even though records and measurements are seldom 100 per cent correct at all times; it is far better to have a 90 per cent correct record to work from than none at all.

Operation of Magnetic Amplifier Controlled Tandem Mills

J. W. Brinks and J. C. Peth—Early this year, a 66-in. wide four-stand tandem mill was put into service at the Allenport plant of Pittsburgh Steel Co. The mill, having a nominal delivery speed of 3190 fpm, has a total stand and reel connected horsepower of 17,700. Individual generators supply power to each stand and reel.

The voltage of each stand generator is matched to a common reference bus through a 400-cycle magnetic amplifier voltage regulating system. Any difference between generator and reference voltages will cause a corrective signal in the control winding of the regulator. An IR drop magnetic amplifier introduces a compensating signal into the control circuit to compensate for stand motor IR drop.

The general scheme of reel control is similar to that using rotating regulators except magnetic amplifier components are used.

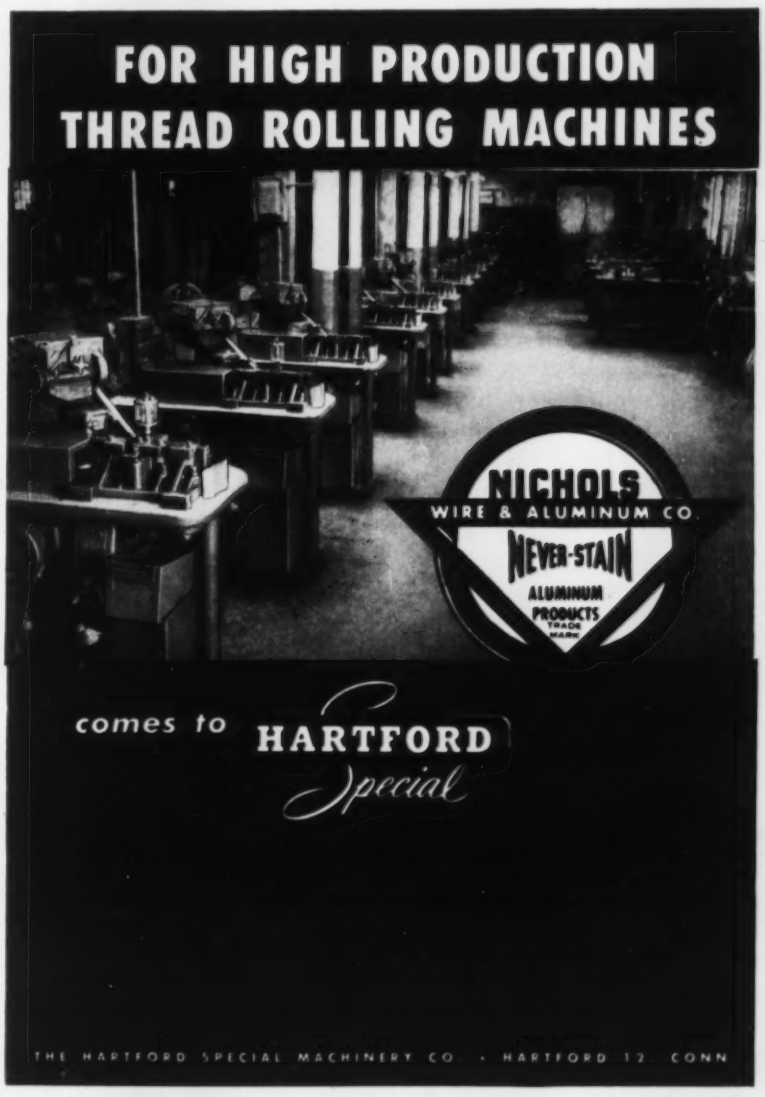
Pinholes in Steel Sheet and Pinhole Detecting Apparatus

G. H. Rendel—Early pinhole detectors were capable of detecting holes about 0.031 in. in diameter at strip speeds up to 100 fpm. With the improvements in optics and electronics, the latest pinhole detector will detect holes 0.001 in. or less in diameter at strip speeds up to about 2000 fpm.

The following are some of the most important developments associated with pinhole detectors:

1. A portable plug-in-type analyzer designed to check performance of detector circuits and electronic components.
2. High-speed control circuits that permit diverting product containing closely spaced pinholes.
3. A sheet pinhole detector designed to inspect and classify perforated sheets as they pass along a conveyor belt.
4. Special controls designed to divert a single sheet on a high-speed processing line. This control permits the diversion of a perforated sheet without the necessity of diverting at least one sheet before and one or more sheets after the perforated sheet to insure diverting the perforated sheet.

Without proper maintenance, the modern pinhole detector rated to detect 0.001-in. diameter holes will be no better than the earlier, less sensitive detector. The most common causes of poor performance are vibration, dirt, and faulty shielding from other electrical apparatus or extraneous light.



DUAL METAL

What is "dual metal"? *Depends on what business you're in!*

To twenty of America's largest basic industries with problems of abrasion or corrosion—or both—"Dual Metal" means U. S. Pipe's Special Products Division.

Specifically, "Dual Metal" is our name for centrifugally cast cylindrical sections in which two dissimilar metals are bonded metallurgically by centrifugal force and temperature.

"Dual Metal" centrifugally cast, integrally fused combinations of two dissimilar metals are doing industry's most difficult and exacting jobs better and more economically than ever before.

Design engineers have been quick to recognize the outstanding merits of a process capable of combining the desired mechanical and chemical properties no single metal possesses.

"Dual Metal" means versatility, efficiency and economy.

Research and development play a vital and increasingly important role in the centrifugal casting of "Dual Metal" combinations. Our Pilot Foundry shown above is devoted entirely to process and product improvement.

U. S. PIPE & FOUNDRY CO.

SPECIAL PRODUCTS DIVISION

NEW ANSWER TO AN OLD REFINING PROBLEM

less abrasion...longer wear

"Dual Metal" solves one of the petroleum industry's most severe and costly problems—catalyst erosion of lift pipe and catalyst handling lines.

In making a "Dual Metal" lift pipe the outer shell of weldable alloy steel is poured into a rapidly rotating mold. The abrasion-resistant alloy iron core is introduced into a spinning mold at the proper time and temperature. Result? A metallurgically bonded two-metal structure that combines the strength and weldability of low alloy steel and the superior abrasion resistance of alloy iron.

"Dual Metal" lift pipes are in use in 33 of the nation's leading refineries showing encouraging evidence of much longer life. In one typical refinery periodic examinations of high temperature catalyst pipes have indicated abrasion resistance of better than 16 to 1 over conventional steel piping. A once troublesome bottleneck in processing has been eliminated and refinery operations made more efficient and economical.

Whether this specific process is the answer to your particular problem, write today for specific literature and information on "Dual Metal" applications for the refining industry.

"DUAL METAL" CENTRIFUGAL CASTINGS

SIZE RANGES

Outside Diameter	6" to 36"
Wall Thickness	½" and up
Length	Up to 14' without welding

Typical Oil Industry Applications: Catalyst Lift Pipe, Depressurizing Pipe, Catalyst Transfer Lines, Slush Pump Liners, Valve Nozzles, etc.

REAL Dollar

SAVINGS ARE YOURS

when you specify

WYCKOFF Cold Finished Bars

CARBON . . . ALLOY . . . LEADED

WYCKOFF ASSURES QUALITY CONTROL . . .

1. Constant Maximum Production
2. Increased Machining Speeds
3. Longer Tool Life

Incorporate these factors (DOLLAR SAVERS) in YOUR SPECIFICATIONS.

25 District Offices and Sales Representatives are always ready to help you promptly and efficiently.

SPECIALISTS IN COLD FINISHED STEELS EXCLUSIVELY

WYCKOFF STEEL CO.

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WYCKOFF STEEL PRODUCTS — Carbon and Alloy Steels • Turned and Polished Shafting • Turned and Ground Shafting • Wide Flats up to 12" x 2" All types of furnace treated Steels

Aluminum Keeps Coat

ALUMINUM PIGMENT is being used with success for high-heat painting applications. All of diesel exhaust stacks at Reynolds Metals Co.'s San Patricio reduction plant were so coated.

The Cooper-Bessemer stacks were first given a gray prime coat, followed by a top coating composed of a silicone resin combined with an aluminum pigment. Despite a normal operating temperature of approximately 950° F, and on occasion 1100° F, the paint, which was applied in 1952, looks as good as new.

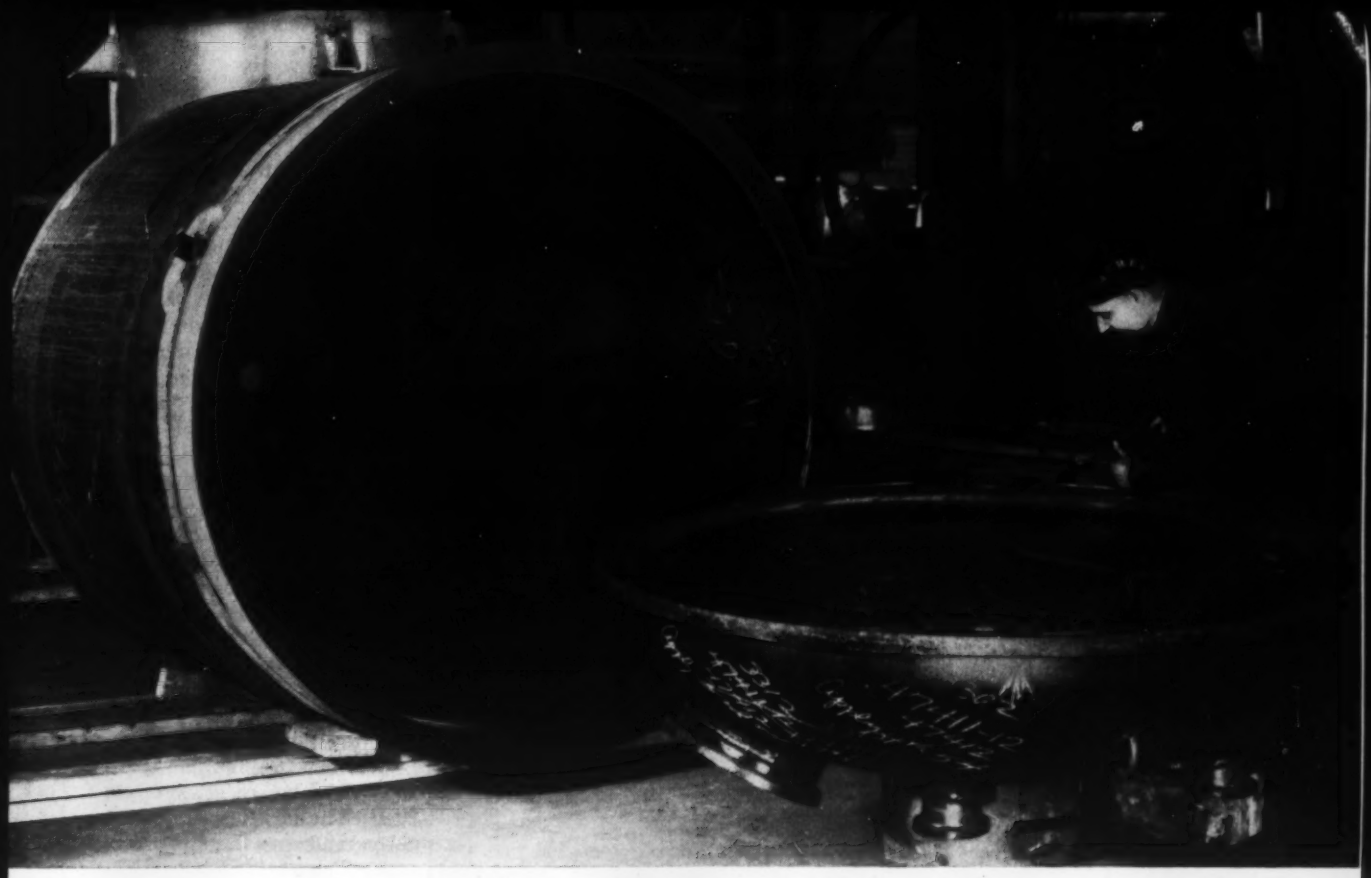
Method—After application of the primer coat, the engines were started immediately and run for 24 hours. The engines were then shut down and the aluminum-silicone paint was applied. The engines were started again bringing the stacks up to full temperature.

ALUMINUM COAT ON STACKS
. . . near perfect after 2½ years

Sandblasting prior to painting proved to be the most successful cleaning method. Where the surface was sandblasted, the condition of the paint is still almost perfect.

Where stacks were cleaned by wire-brushing, there was a tendency for the paint to spall. With sandblasting, the initial cost is high, but increased life given the paint makes this method more economical over a period of years.

Many oil companies in the area consider a 90-day life on an ordinary paint job to be excellent.



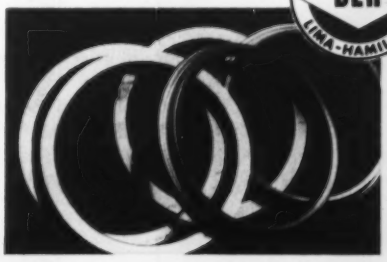
SSW forged ring flanges enable Pfaudler to increase pressure capacities of glass-lined tanks 50%

By switching to Standard Steel forged ring flanges for manholes and larger openings in their glass-lined tanks, The Pfaudler Company, Rochester, N.Y., has increased normal pressure capacities 50% above previous limits. These rolled, weldless flanges replace integral flanges formed in the tank wall or flanges formed from steel plate and welded to the tank shell.

Standard Steel forges these 24″ to 84″ ring flanges to heavier and more efficient shapes than Pfaudler could get previously. An increase in the flat surface area of the flanges permits increased pressures. The switch to forged flanges also has eliminated the serious problem of warping during annealing or stress relief before applying glass linings.

SSW shapes these rings as close as possible to finish dimensions in the rolling operation to minimize the amount of metal removed in roughing and finishing cuts. However, ample material is available for forming a bead on the edge of the flange to retain the clamps which hold the covers tightly on the gaskets.

Pfaudler's use of Standard Steel's weldless flanges is just one of the very diverse ways ingenious users are improving their products by switching to roll forged rings and flanges (12″ to 144″ O.D.). It'll pay you, too, to investigate how they can benefit you. For more facts please write to Department 8646, Standard Steel Works Division, Baldwin-Lima-Hamilton Corporation, Burnham, Pennsylvania.



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●

LUSTRABRASS— Bright dip for brass—eliminates fumes and gives a uniform high luster—used at room temperature—Data Sheet No. 35.

●

METEX M-600— Alkaline deruster and smut remover—used with low voltage D.C. current in steel equipment. Eliminates need for acid treatments to remove rust and scale—Data Sheet No. 33.

●

PHOSPHATE TREATMENTS— Available to meet any of your needs for preparation prior to painting—immersion, spray and wipe-on types—zinc phosphate, iron phosphate, and acid phosphate types—Data Sheets No. 31, 27 and 11.

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Protective Coating

NICKEL CLAD steel is used in the fabrication of industrial degreasing equipment and at no greater cost than equipment fabricated with less effective clad metals.

Savings in material costs result from tailored thicknesses of nickel which can be deposited on steel. Bart Manufacturing Co. makes available deposits of nickel ranging from 0.007 to 0.020 in. thick, regardless of thickness of the steel.

Electrodeposited — Lectro-Clad steel offers excellent corrosion protection and is being used in all models of Circo degreasers, including the highly successful ultrasonic degreaser, whenever a nickel clad unit is specified by the customer.

Steel sheets and plates, ranging from 11 gage to 1 in. thick or more, are now being clad with Lectro-Clad nickel in sizes up to 7 x 20 ft. The nickel so deposited is tightly bonded to the steel, ductile and will withstand any fabricating processes, including welding.

Other Applications—In addition to its usefulness for degreasing equipment, various types of corrosion resistant equipment are being coated. Thickness needed is determined by corrosive and erosive conditions. Thin deposits are excellent for contamination control.

Because of savings in material, it is gaining wide acceptance in upgrading equipment where the protective qualities of nickel are highly desirable, but where in the past, the cost of nickel cladding has been prohibitive.

Statistics Available

American Metal Market Co. has published the 1954 edition of their yearbook, *Metal Statistics*. This 848-page, pocket-size reference book contains up-to-date as well as historical records of production, consumption, stocks, imports and exports, monthly and annual market price averages and information on miscellaneous economic subjects.

Copies may be obtained from the publisher at 18 Cliff St., New York 38, or from STEEL, Penton Bldg., Cleveland 13, for $3.00.

NEW PRODUCTS and equipment

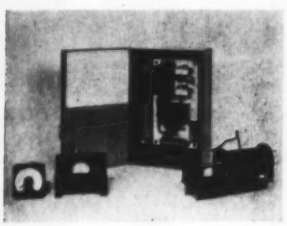
Reply card on page 203 will bring you free literature, editorial clips or more information on new products and equipment described or advertised in this issue

Position Transmitter

. . . accurate return

This electrical device, Electric Position Transmitter for Linear Motion, enables the operator of a linear motion machine to return the machine to a previous position within 1 per cent accuracy.

Components of the unit are a transmitter on the machine, a control panel at any convenient place and an instrument located at the operator's control station. Positions of the machine are measured and



transmitted exactly to the operator by the unit. It will transmit total travel in ranges from 5/8 inch to 3 inches. Control Products Co. Inc.

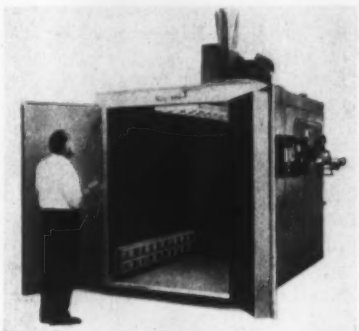
FOR MORE DATA CIRCLE REPLY CARD NO. 1

Batch Type Ovens

. . . gas or electric

They have been found especially adaptable for burn-off. Air circulation is automatic, both horizontal and vertical, completely surrounding work to assure uniform temperature. Gas models have Eclipse gas burners, with electric push-button ignition and safety pilot. Electric models have Inconel-sheathed, lifetime heating elements with outside terminals, no wiring exposed to oven temperatures, and they're equipped with high and low heat switch and steel plate floors.

Other features include: Parlow indicating temperature controller; electrical interlock that shuts oven down on blower or exhauster motor



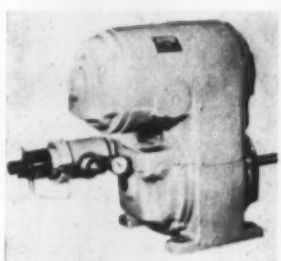
failure; mechanical interlock permits blower or exhauster operation without heat for purge period or rapid cooling. Grieve-Hendry Co. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 2

Transmission Control

. . . automatic drive

A pneumatic control for the Speed-Trol, a variable speed transmission, uses a Cono Motor and provides an automatically controlled drive for variable processing operations, such as pressure, tem-



perature, liquid level, proportional flow and control of rewind.

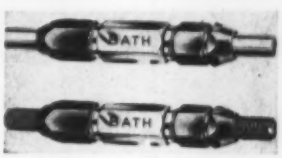
The unit is available with standard or special electrical characteristics in single, double and triple reduction gear combinations, with a wide variety of mounting options. Each type of Speed-Trol with gears can be mounted without modification on floor, wall or ceiling with shaft horizontal or vertical. Sterling Electric Motors Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 3

Plug Thread Gages

. . . cuts gaging costs

This line of thread and cylindrical reversible gages has just been added to a line of ground thread taps and regular thread gages.



They're made from selected steel and have a luster-lapped finish. Adjustable for use as depth gages, they have go-and-no-go color identification. John Bath & Co. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 4

Duplex Sawing Machine

. . . crops simultaneously

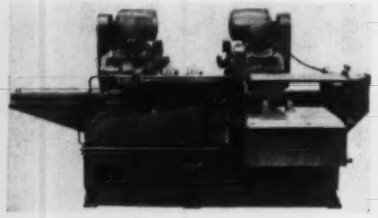
The sawing heads, one right and one left, are arranged for the automatic cropping of both ends of an 8-inch shell forging simultaneously. They have nine spindle speeds.

A multiple disc clutch engages the spindle drive. The lubrication system, which is self-contained, services all bearing points.

Base is of heavy duty, welded steel fabrication (stress-relieved and normalized) with a coolant

sump and ample chip compartments.

The shell forgings are magazine loaded from conveyor and individually passed into loading position by an escape mechanism. Motch & Merryweather Machinery Co.

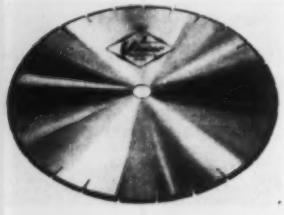


FOR MORE DATA CIRCLE REPLY CARD NO. 5

Diamond Blades

. . . tungsten carbide-bonded

This feature is said to give longer cutting life. Because the diamond is so firmly held by this material, a much greater percentage of diamond is used by cutting.



The blade cuts highly abrasive materials such as concrete block, firebrick, sandstone, granite etc., plus regular materials. Reports indicate an equally long blade life, cutting both green and cured concrete, whether contraction, joint or patch worksaw. Victor Engineering Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 6

Aluminum Paint

. . . fuses with hot metal

A new combination of leafing and nonleafing aluminum is said to have improved adhesion and appearance of Heat-Rem H-170. Nonleafing particles remain suspended in the vehicle to provide a uniform quantity of aluminum throughout the applied paint coat. This is reputed to make possible virtual fusion of paint with hot surface metal and to form a protective coating capable of withstanding temperatures reaching about 1700° F.

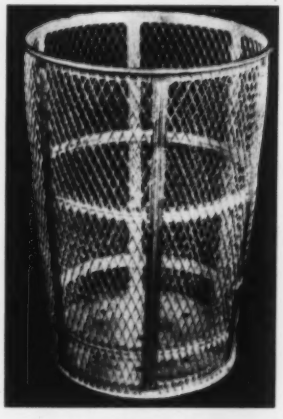
Leafing aluminum content rises to surface upon application to form a bright, elastic finish resistant to moisture, corrosion, mild acids, alkalis and industrial fumes. Speco Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 7

Refuse Basket

. . . of expanded metal

They're sturdy enough to withstand severe wear without reinforcement. The basket is 32 inches high, weighs 30 pounds ungalvanized, 34 galvanized. Top diameter is 24 inches. The rolled top edging, burr-free for safe handling, is welded to expanded metal over the entire perimeter.



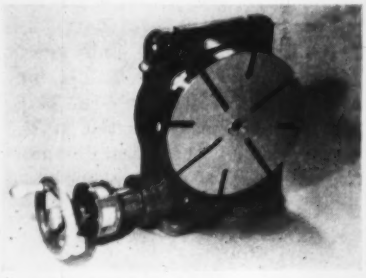
The one-piece body will not ravel. Small, diamond-patterned openings permit drainage and ventilation but prevent escape of refuse. Six equally-spaced ribs prevent bulging and the dished bottom is perforated to permit drainage. Wheeling Corrugating Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 8

Rotary Table

. . . precise angular spacing

Model No. 2 Moore 11-inch rotary table has an over-all performance accuracy of ±6 seconds through the entire 360 degrees. It was developed to meet a demand for more precise angular spacing, achieved through use of nondisengageable, thread - ground worm in combination with accurately-spaced teeth of its mating gear.



Accurate in either horizontal or vertical position, the rotary table is ideal for countless precision spacing applications on jig borers and jig grinders. An additional vernier permits normal reading even in the vertical position. Moore Special Tool Co Inc.

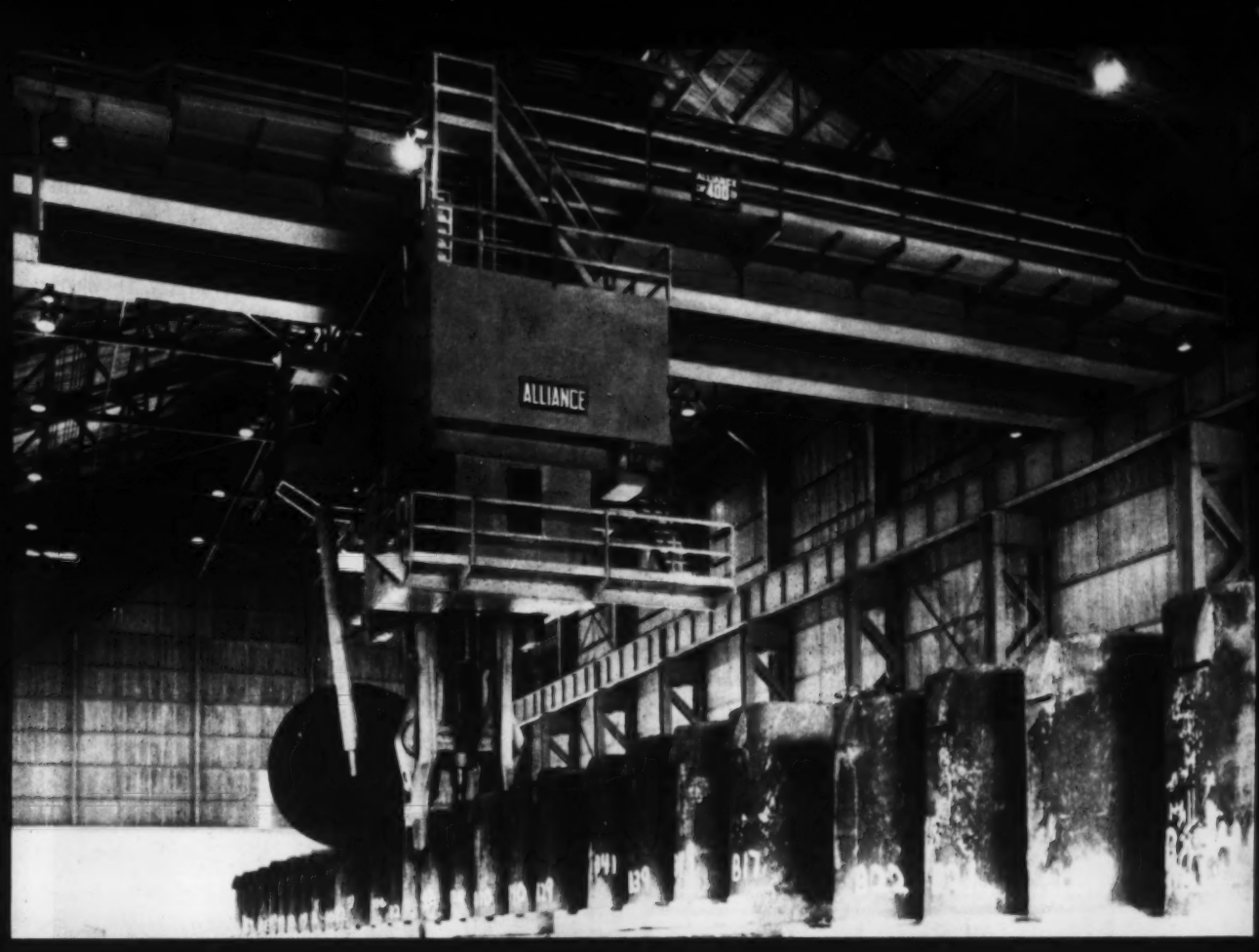
FOR MORE DATA CIRCLE REPLY CARD NO. 9

Welding Electrode

. . . three aluminum alloys

To provide maximum weld quality in inert-gas-shielded-arc welding of aluminum, a consumable electrode was developed to get the weld soundness called for in Navy specs. It does not require a special welding gun.

The electrode is available in aluminum alloys 2S, 43S and A54S. It is packaged and stocked on nonreturnable fiber spools in several



IMPACT STOOL LOOSENER

REDUCES WEAR ON STRIPPER CRANES

The big 400-ton Alliance push-pull Stripper Crane exerts 2,400,000 pounds' pressure to strip moulds from ingots cleanly and frees stool stickers at the same time. It's done with the patented Impact Stool Loosener. It reduces wear on stripper cranes, eliminates jiggling by crane, sends ingots to the mill ready to go . . . no need to loosen them with soaking pit cranes. The Alliance Impact Stool Loosener can be installed on any stripper crane. Big Alliance strippers, with a nameplate rating of 400 tons and overload rating of 1200 tons, embody many exclusive design features . . . a result of Alliance's knowledge of mill procedures and problems. Have Alliance analyze your lifting needs. A letter, wire or phone call brings the information you require.

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Give Us The Runway And We'll Lift The World

Which of these jobs gives you trouble?

Oakite has 6 new ways to help you

Oakite chemists have developed efficient new materials for the six important jobs listed below. One of these new materials may provide the perfect solution for your most difficult problem.

1 **HEAVY-DUTY CLEANING IN TANKS:** New material combines the best qualities of alkaline and solvent cleaners.

2 **PHOSPHATE COATINGS:** One material cleans steel while applying dense iron-phosphate coating. Another surpasses government specifications for heavy zinc-phosphate coatings. Lasting paint adhesion, protection against corrosion, ease of control.

3 **ETCH-CLEANING ALUMINUM:** Uniform etching in preparation for anodizing or painting. Scaling and sludging minimized or eliminated.

4 **ELECTROCLEANING BRASS:** Efficient, economical cleaning without danger of tarnish.

5 **INHIBITING PICKLE BATHS:** Liquid inhibitor for sulphuric, hydrochloric and phosphoric acids. Saves steel, saves acid, builds own foam blanket to suppress pickling fumes. Easy to add to continuous strip or batch pickling operations.

6 **STRIPPING PAINT:** Two solvent strippers for synthetic enamels and other tough finishes. One so viscous it adheres to vertical surfaces of objects that can't be stripped any other way.

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Circle the coupon number corresponding to the job that gives you trouble. We'll send information about the new material for the work, also our 44-page illustrated booklet "Some good things to know about Metal Cleaning."

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Send me a FREE copy of "Some good things to know about Metal Cleaning" and tell me more about the new Oakite material for the job (jobs) corresponding to the number (numbers) I've circled below.

1 2 3 4 5 6

Name_____

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NEW PRODUCTS and equipment

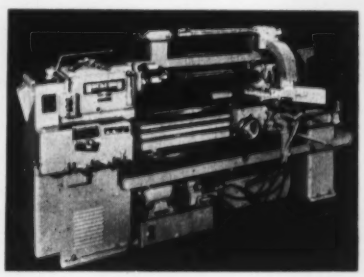
wire sizes: 0.030, 0.040, 3/64, 1/16, 3/32 and ⅛-in. diameters. Mill quantity orders can be obtained in all wire sizes from 0.020 to ⅛ in. The diameter tolerances are plus 0.001 in. to minimum 0.002 in. Each spool of I. G. Electrode contains 10 pounds of wire level wound in one continuous length. Spools are individually carton packaged. Aluminum Co. of America.

FOR MORE DATA CIRCLE REPLY CARD NO. 10

Engine Lathe

. . . tracer controlled

The all-geared head, 18-in. machine has 12 spindle speeds, 32 feed changes and bed lengths from 6 to 12 ft. It is powered by a 5-hp motor, and spindle speeds go up to 1140 rpm.



Among the machine's features is an entirely independent, sealed pumping unit, with a governor controlled pump; the template carrier is mounted high enough for maximum operator visibility; and the feed throw-out clutch is automatic. The accuracy of the control will satisfy the most rigid turning tolerances, and the machine will do repetitive tracing to thousandths. Rockford Machine Tool Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 11

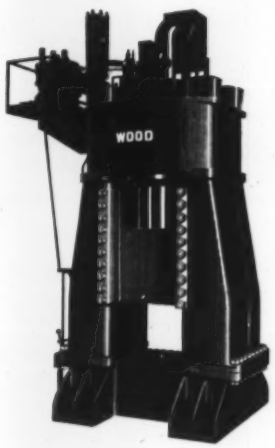
Bench Gage

. . . internal, external check

Model 21 is said to provide an accurate check on threads in these tolerance classes and sizes: From 5/16 in. to 5 in. in diameter for internal threads and No. 8 to 5 in. in diameter for external threads.

Gaging contacts are a pair of threaded segments. Internal thread segments are similar to split plug.

How long are nine lives?



IN METALWORKING, THE PAYOFF'S AT AN R. D. WOOD PRESS LIKE THIS ONE!

This 3,000-ton hydraulic press is designed specifically for high-speed, heavy duty die forging and ingot cogging. R. D. Wood presses are made for many uses, and in various sizes to suit production requirements. Ask for informative catalog, and for engineering aid—both yours without obligation.

The amazing ability of cats to survive what might be called "punishing service conditions" has given rise to the 9-life theory. How long a period this is nobody really knows. That's the way it is with R. D. Wood hydraulic presses . . . their life seems limitless, too. Some of them are scarcely beginning to draw their second wind after 25 years in service. Others are still going strong at 50. What every owner knows for certain about his R. D. Wood presses is that they have no trouble outliving the time needed to earn the original investment . . . and then some. An informative catalog is available.

R. D. WOOD COMPANY

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MAKERS OF HYDRAULIC PRESSES AND VALVES

FIRE HYDRANTS

CAST-IRON PIPE

GATE VALVES

GAS PRODUCERS

ACCUMULATORS

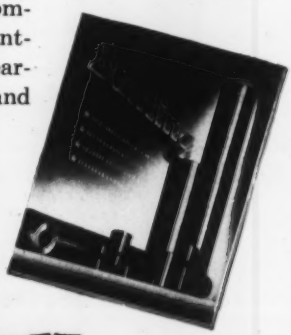
HE has it...

the information you want!

YOUR industrial distributor can tell you many ways in which you can save money by using Bunting Bronze Bearings and Bars and the other material and equipment items he sells.

He has selected each of the countless things in his stocks after careful study and comparison, seeking those which will do the most for you.

YOUR BUNTING distributor is the leading industrial distributor, or a stock-carrying specialist in certain industrial items. With money-saving convenience, he can supply hundreds of different sizes of completely machined and finished Bunting Standard Stock Industrial Bearings, Electric Motor Bearings and Precision Bronze Bars.



Ask him for a Bunting Catalog which gives complete dimensional and technical data.

Bunting®

BRONZE BEARINGS • BUSHINGS • PRECISION BRONZE BARS

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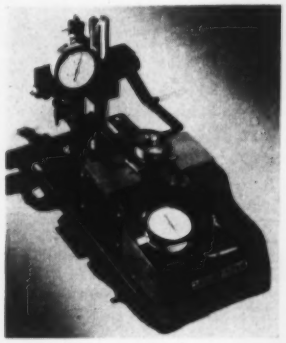
NEW PRODUCTS and equipment

Segments for checking external threads are similar to split ring. Segment parts are interchangeable on basic gage to cover range of thread diameters. Gage mechan-



ism can be changed to internal or external thread checking positions. Gage weighs about 10 lb and occupies 6 x 9 in. of bench space. Bryant Chucking Grinder Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 12

Plastic Cement

. . . with many applications

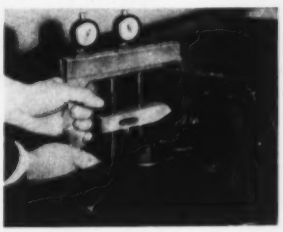
A neutral setting cement, Vitroplast is said to be resistant to many solvents, salts and acids and oxidizing agents, such as chlorine dioxide. Atlas Mineral Products Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 13

Hardness Tester

. . . two sizes available

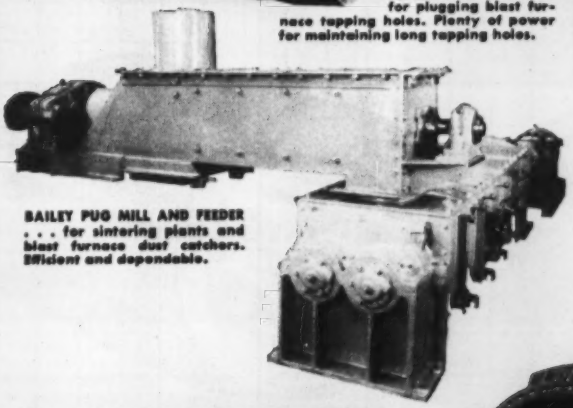
These portable testers (for laboratory and production work) are the product of Riehle Testing Machines Division. Model PHT-1 tests



specimens up to 4½ in. in diameter, while Model PHT-2 takes specimens up to 12 in.

They weigh only a few pounds, come in handy carrying cases and simply clamp onto specimens. Employing a standard Rockwell indentor and loadings, testers are

BAILEY CLAY GUN . . . for plugging blast furnace tapping holes. Plenty of power for maintaining long tapping holes.



BAILEY PUG MILL AND FEEDER . . . for sintering plants and blast furnace dust catchers. Efficient and dependable.

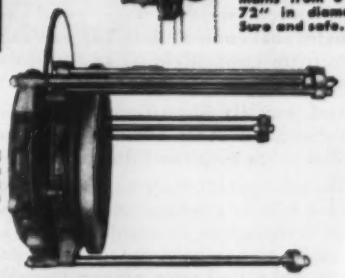
Bailey EQUIPMENT

Does many jobs

. . . EFFICIENTLY
. . . SAFELY . . . and
WITH LESS MAINTENANCE

BAILEY CINDER NOTCH STOPPER . . . eliminates hazards to workmen at the cinder notch.

BAILEY Mechanical GOGGLE VALVE . . . for controlling gas mains from 6" to 72" in diameter. Sure and safe.



BAILEY Thermal Expansion GOGGLE VALVE . . . uses linear expansion and contraction of steel to insure tight seal and quick opening of valves controlling gas mains from 36" to 120".

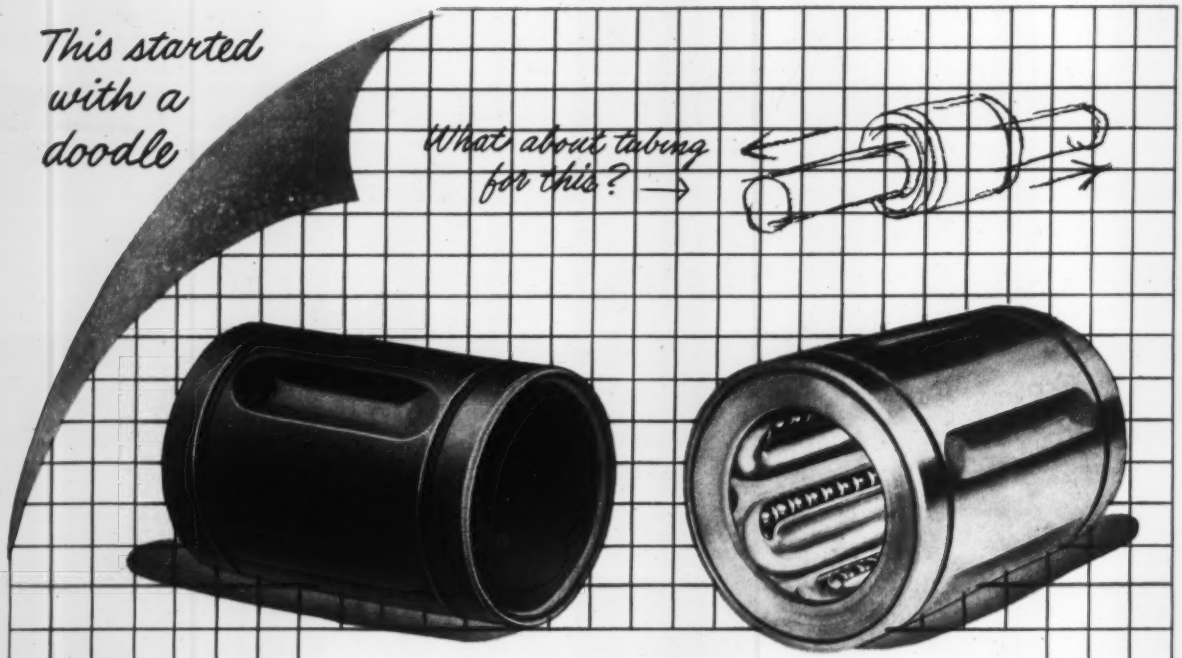
BAILEY PIG CASTING MACHINE . . . for increased casting capacity for foundries and blast furnaces. Sturdy, trouble-free.

Each piece of Bailey Equipment is engineered with two basic ideas in mind—safety under all operating conditions, and highly efficient operation with a minimum of maintenance.

- Thermal Expansion Goggle Valve
- Mechanical Goggle Valve
- Electric Plunger Clay Gun
- Double Shaft Pug Mill
- Sintering Plant Pug Mill
- Cinder Notch Stopper
- Stationary Wheel Pig Casting Machine
- Blast Furnace Cold Blast Valve
- Blast Furnace Blow-Off Valve
- Check and Snort Valve
- Mixing and Check Relief Valve
- Blast Furnace Stove Checker
- Fabricated Steel Stove Bottom
- Regenerative Furnace Checker
- Precision Table Feeder
- Ladle Skulling Hook

ENGINEERS

1221 BANKSVILLE ROAD PITTSBURGH 16, PA


This started with a doodle
What about tubing for this?

Precision Tubing for Precision Jobs

Tubing tolerance is a big "must" on this job. Thomson Industries, Manhasset, N.Y., insists on it. Otherwise, manufacturing BALL BUSHINGS (ball bearings for linear motion) would have been even tougher than it was.

Part of the problem was the tubing to house the bearings and the raceway. Those bearings are very tough on tubing . . . especially at the contact points.

Other requirements were: good surface conditions; good dimensional control, both I.D. and O.D.; uniform wall thickness; uniform concentricity; and uniformity from a metallurgical standpoint to stand heat treating.

And, equally important, economy. By using ELECTRUNITE Tubing, Thomson Industries eliminates a grinding operation. That helps keep costs down.

The tubing that has all these advantages is Republic ELECTRUNITE, a *precision* mechanical tubing for applications like this. You can get it in carbon or stainless analyses. And Republic engineers will be glad to help you use it, profitably, in whatever products you make. Call your nearest Republic Sales Office or write to:

REPUBLIC STEEL CORPORATION
Steel and Tubes Division
253 East 131st Street, Cleveland 8, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, New York

REPUBLIC ELECTRUNITE TUBING

WELDED DESIGN REDUCES VIBRATION CUTS COSTS

CONTRARY to traditional belief, high-speed machinery like printing presses can be made from welded steel to run faster, smoother with minimum adjustment for register. Savings in cost are up to 50% compared to former cast designs.

This 75-foot welded steel press built by Goss Printing Press Company for a popular magazine publisher runs at 11,500 impressions per hour compared to 4,000 by the press it replaced. Yet, vibration is less, make-ready is faster, fewer adjustments are needed.

The housing for the folder frame on this Goss Printing Press (Figure 1) previously weighed 405 pounds . . . cost $683.00. The welded steel frame weighs only 300 pounds, costs only $123.00 . . . *an 84% reduction in cost.*

The folder bed plate (Figure 2) was a 4,113-pound casting and cost $1,725.00 to cast and machine. The welded bed plate now used weighs 3,000 pounds and costs only $248.00.

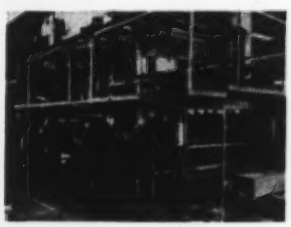


Fig. 1. Saves $560.00 per frame *by converting to welded steel design. Weight is cut from 405 to 300 pounds per frame.*

Fig. 2. Saves 1,113 pounds . . . *cost down 86% on press folder bed plate.*

HOW TO DESIGN FOR LOW COST

Machine design sheets showing how to simplify design, save metal and cut costs are available to product engineers and designers by writing on your letterhead.

THE LINCOLN ELECTRIC COMPANY
Dept. 1608, Cleveland 17, Ohio
THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

NEW PRODUCTS and equipment

said to eliminate errors due to conversion from other scales. They check inside and outside surfaces. American Machine & Metals Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 14

Load Cells

. . . extend capacity range

Five SR-4 load cells are in the 0 to 50-pound range. Three Type U-

1 load cells, (for loading in tension or compression) have capacities of 0 to 50, 0 to 100 and 0 to 200 pounds. Two Type T-1 cells, (for tension loads only) have ranges of 0 to 100 and 0 to 200 pounds.

Load cells operate on alternating or direct current at 4 to 8 volts. Input resistance is 120 ohms. Calibrated accuracy is within ¼ per cent. Hermetically-sealed containers protect load-sensitive elements of U-1 cells. Baldwin-Lima-Hamilton Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 15

Paint Stripper

. . . reduces stripping time

"By as much as one third," the manufacturer of Vantrol 5610A claims.

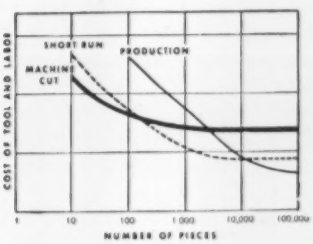
The non-dusting stripper is effective in removing heavy greases, mineral oils, heavy carbonized soils, crater compounds and heavy sludge. It is a heavy-duty, alkaline-tank-type cleaner with a high wetting and penetrating phase. Combination of solvents aid in emulsification, penetration and softening of dirt and paint films. It is non-

STAMPINGS

Our impartial use of three basic methods gives you economy regardless of length of run.

Most parts can be made by all three methods. But only **one** is **most** economical. The right decision is a technical one, based on **over-all** quantity, contour dimensions, tolerances and materials.

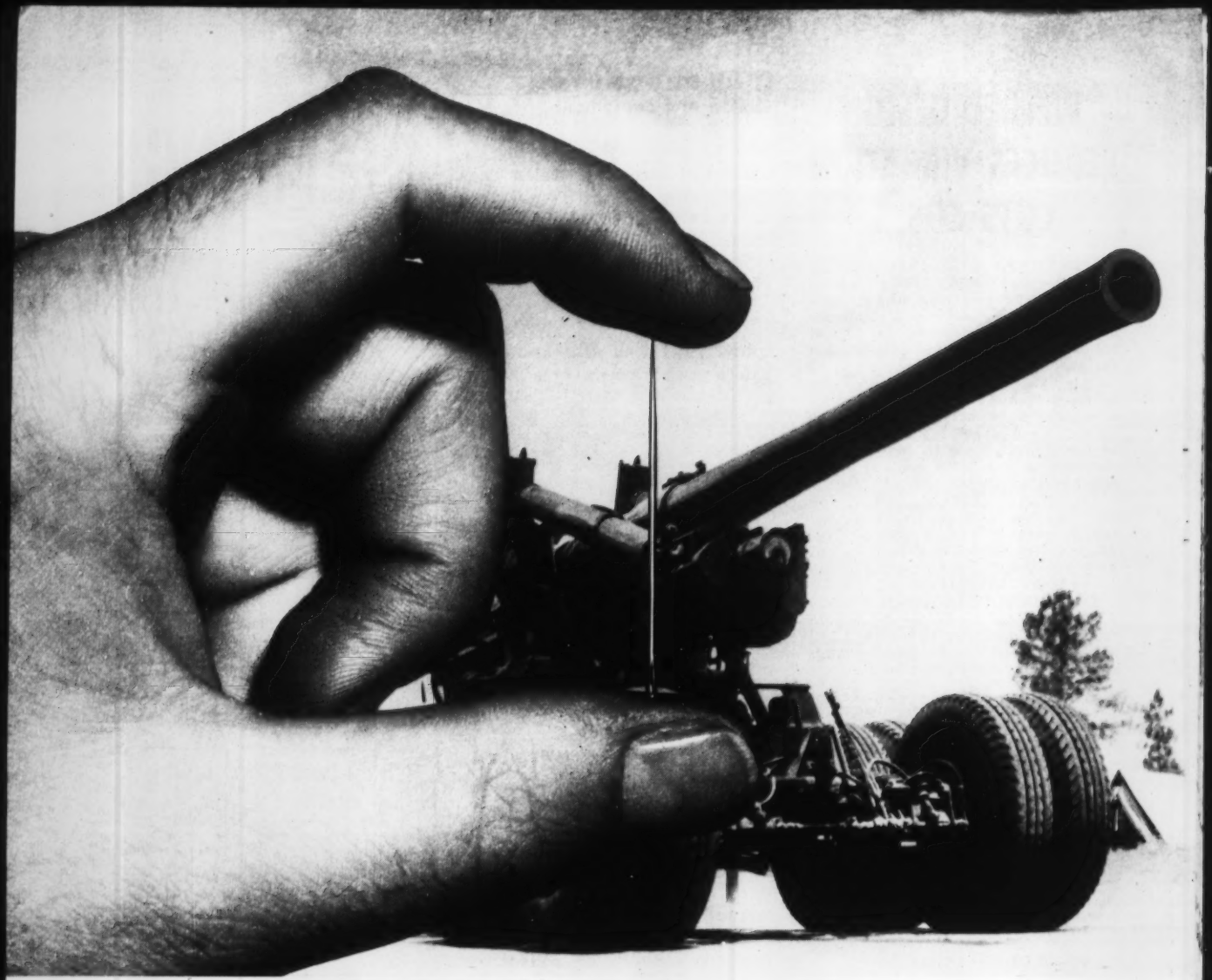
YOUR SUPPLIER SHOULD KNOW ALL THREE METHODS

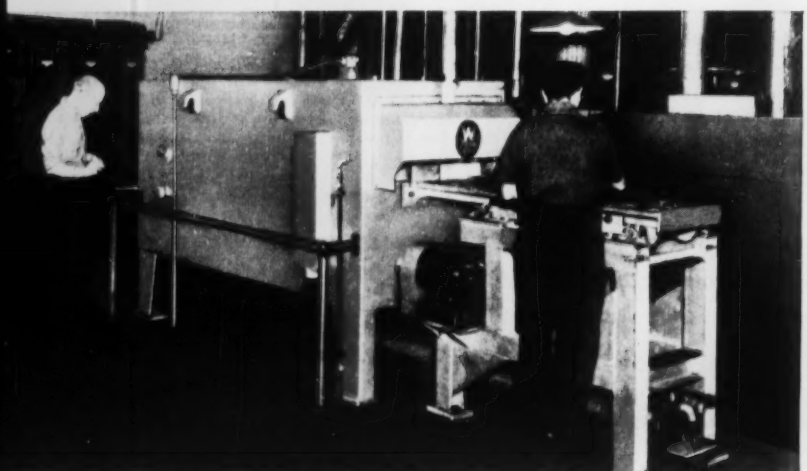


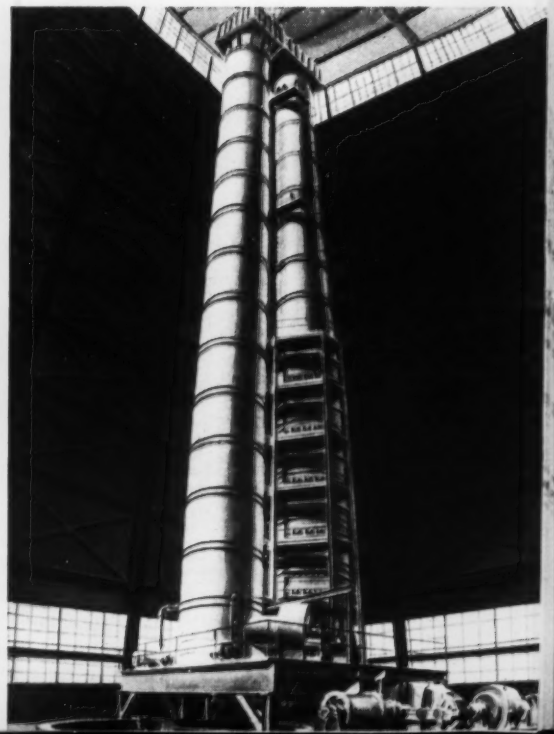
This logarithmic chart shows the effect of these factors on the **specific part** illustrated. From 1 to 150 parts, our own **Machine-Cut Method** with no die cost whatsoever is most economical. At 150 parts, the **Short-Run Method** using economical blanking dies and stock punches is best. At 10,000 units, the standard **Production Method** with standard dies is most satisfactory.

SEND FOR INFORMATIVE LITERATURE

STAMPINGS DIVISION
LAMINATED SHIM COMPANY, INC.
3409 Union Street, Glenbrook, Conn.







FROM BOX TYPE TO ELEVATOR TYPE . . . this wide range of Westinghouse furnaces offers industry heat-treating units specially engineered for the smallest toolroom jobs on up to furnace capacities for massive parts treating. Accurate temperature control, uniform temperature distribution and low heat loss in Westinghouse furnaces assure high and constant quality level.

Needles to cannon barrels . . .

heat-treat them in Westinghouse furnaces

Across the board in heat-treating, for small jobs or mass production, Westinghouse makes the exact furnace needed. From manually operated box type to complex automatic conveyor units, Westinghouse furnaces assure the maximum in speed, quality and economy.

This complete line includes furnaces using either gas or electric heat source . . . atmosphere generators providing all gas variations required . . . and auxiliary equipment to speed and simplify work handling.

Specialized Engineers and Facilities Work for You

Westinghouse offers a unique and comprehensive service that extends ideas, know-how and capacity to solve heat-treating problems. At any stage of planning or production, Westinghouse engineers can be called to your plant for sound, unbiased recommendations that will help you get more from heat-treating operations. Skilled designers, packaged installation techniques (even to complete erection and installation where needed) and maintenance follow-through, combine with this engineering staff to form a dependable service that is unmatched in the heat-treating field.

Use coupon below for your free 40-page book on the complete line of Westinghouse furnaces and equipment. For further information write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-10433

YOU CAN BE **SURE**...IF IT'S

Westinghouse

Westinghouse Electric Corporation
3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania

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SELECT A Sterling THAT FITS YOUR JOB!

TUBULAR STEEL FRAME

(Above)
Model D3½S Maximum Capacity 3½ cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs. V-shaped front braces and brace support.

(Right)
Model C5W Maximum Capacity 5 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

12 SPOKE STEEL WHEEL

PNEUMATIC TIRED WHEEL

IMMEDIATE SHIPMENT

There's a Sterling Barrow for every type of hauling job, whether it's dry, bulky materials like sawdust or heavy industrial loads like castings or steel parts. Also special barrows for brick, tile, coal, concrete block and similar materials. All barrows are scientifically designed, well balanced and sturdily constructed for a long service life. Choice of wood handles or tubular steel frame, steel wheels or pneumatics. Write for new Sterling Wheelbarrow Catalog

WOOD HANDLE BARROW

DEALERS: Want to sell quality wheelbarrows? You can on our non-exclusive basis. Write for details.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

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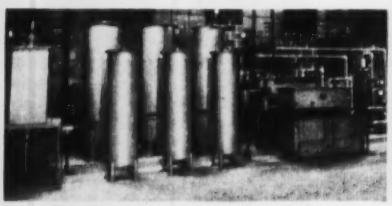
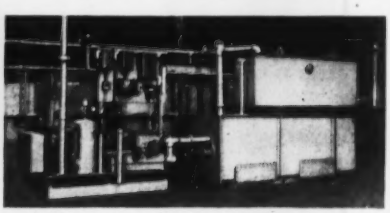


An EF installation consisting of a 1500 and a 3000 cfh exothermic horizontal water cooled type special atmosphere unit, each with desulphurizing towers and refrigerators for bright annealing steel and copper, and clean annealing brass.

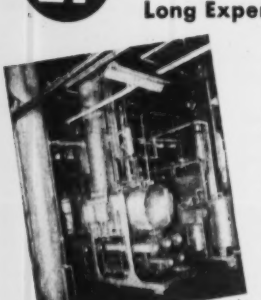


An EF kerosene exothermic gas generator. These are also built in several sizes and types for producing special atmospheres for use in bright annealing copper and steel products in areas where fuel gases are not available.

EF SPECIAL ATMOSPHERE EQUIPMENT

For any Heat Treating Process... any Capacity

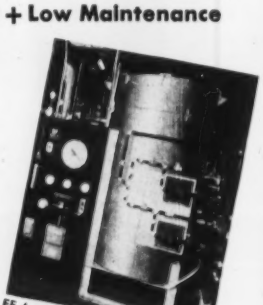
Long Experience = High Efficiency + Low Maintenance



Gas scrubbing units are available in several sizes and types for use with any type of EF special atmosphere generating equipment where it may be necessary to remove CO_2 or H_2S.

● As pioneers in the development and use of equipment for producing low cost special atmospheres, we are in position to furnish a wide range of reliable, thoroughly tested special atmosphere units, including endothermic and exothermic gas generators, ammonia dissociators, refrigerators, dryers, desulphurizers, gas scrubbing units and other special atmosphere equipment—equipment with a reputation for high efficiency,—and low maintenance and operating costs.

Submit your furnace or special atmosphere problems to experienced engineers — IT PAYS



EF Ammonia Dissociators are built in many sizes and types for producing highly reducing atmospheres as required for bright annealing stainless; and other annealing and normalizing processes and preventing decarburization.

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WILSON ST. at PENNA. R.R. Salem - Ohio

GAS FIRED, OIL FIRED AND ELECTRIC FURNACES FOR ANY PROCESS, PRODUCT OR PRODUCTION

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NEW PRODUCTS and equipment

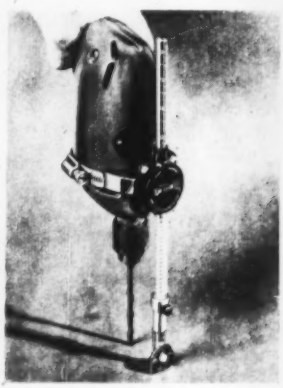
toxic, non-inflammable and requires only the precautions necessary for handling any heavy duty alkaline cleaner. Van Straaten Chemical Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 16

Precision Drilling

. . . with guide attachment

Attached to any portable electric or pneumatic drill, the Guid-O-Dril® enables inexperienced workers to drill or ream true holes every time. Forward end consists of a quadrant marked in 15-de-



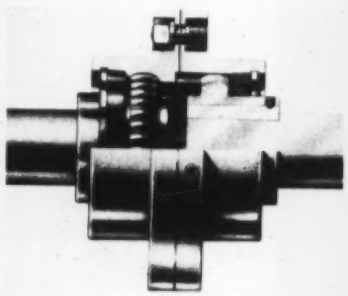
gree graduations for vertical or angular alignment, plus an additional indicator scale for easy simultaneous alignment in the horizontal plane. There is a built-in depth gage. High Standard Mfg. Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 17

Coupling

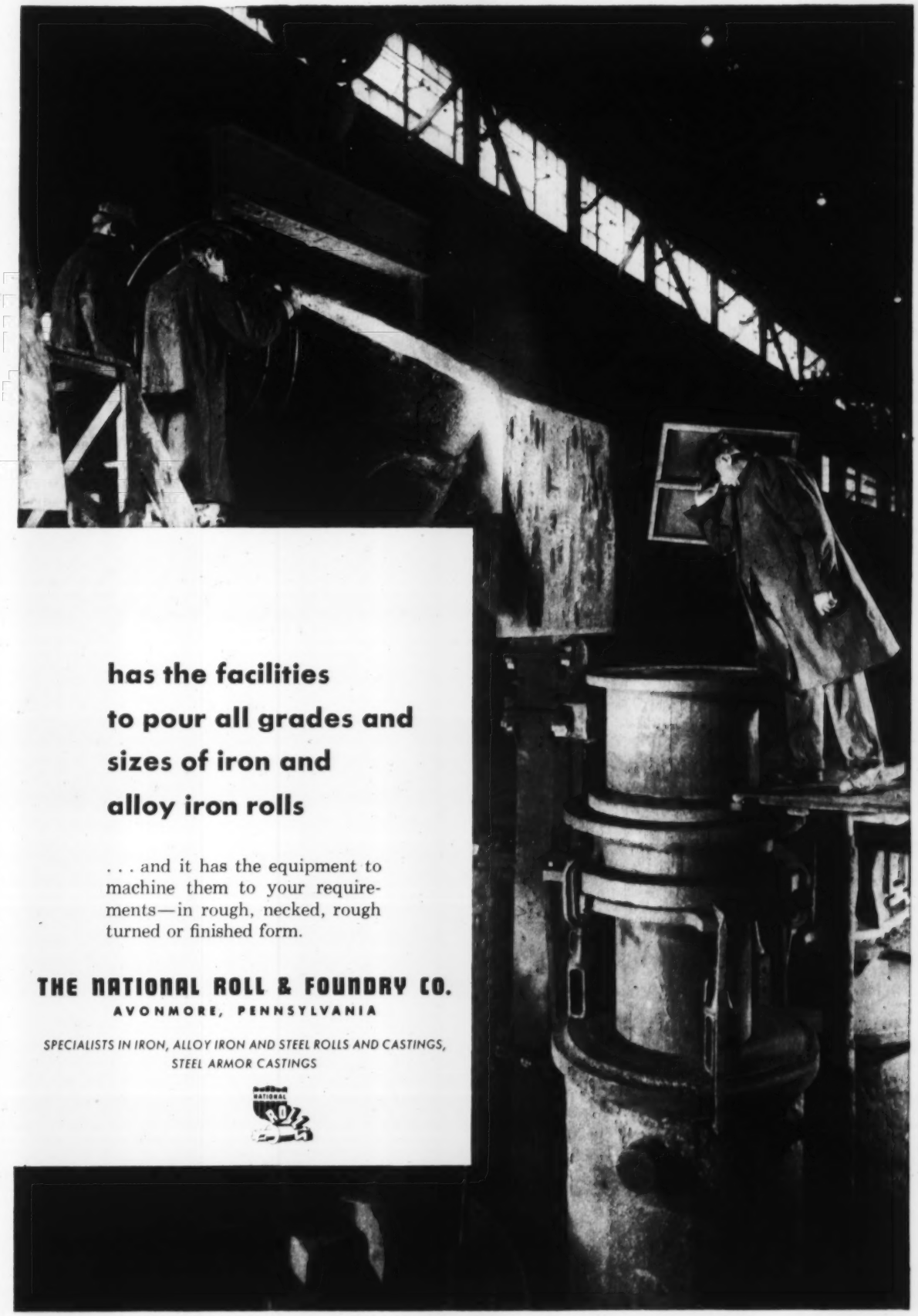
. . . maintains contact

Male teeth are half cut on a true spherical arc; internal teeth are cut with a straight root. They are



priced to compete with regular couplings.

When misalignment occurs, the



has the facilities to pour all grades and sizes of iron and alloy iron rolls

. . . and it has the equipment to machine them to your requirements—in rough, necked, rough turned or finished form.

THE NATIONAL ROLL & FOUNDRY CO.
AVONMORE, PENNSYLVANIA

SPECIALISTS IN IRON, ALLOY IRON AND STEEL ROLLS AND CASTINGS, STEEL ARMOR CASTINGS

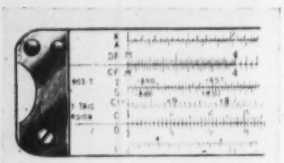
curved tooth maintains constant area of contact with internal tooth. Teeth are of uniform thickness from side to side. The standard coupling is suitable for angular misalignments up to ± 3½ degrees on each coupling half, giving a total ±7 degrees for standard coupling. Available from stock in sizes 0 through 6, the larger couplings are made to order. Philadelphia Gear Works.

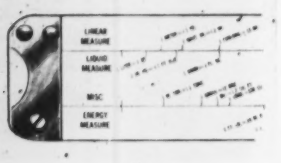
FOR MORE DATA CIRCLE REPLY CARD NO. 18

Slide Rule

. . . accurate, easy to use

A conversion slide rule bearing 64 linear, liquid, energy and miscellaneous factors on one side, plus a complete trig scale arrangement





on the reverse side, is announced.

By positioning a conversion mark opposite an index mark, any conversion is automatically set and read without moving the slide or further computation. The 903-T single-setting rule is made of light weather-proof metal alloy. Pickett & Eckel Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 19

Portable Ingot Stripper

. . . in three sizes

This redesigned unit is announced by the Pittsburgh Engineering & Machine Co. Division. Weight and over-all height are substantially reduced.

Self-contained hydraulic units include pump, tank, motor, valves and piping, with simple controls added in crane cable. Stripper is suspended from an ordinary crane hook. Three units have capacity of 250, 450, and 600 tons. Pittsburgh Steel Foundry Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 20

FREE LITERATURE

Catalogs and Clip Sheets

Reply card on page 203 will bring you free literature, editorial clips or more information on new products and equipment described or advertised in this issue.

Space Heaters

Dravo Corp.—Bulletin No. 552 describes a line of Paraflo warm-air, oil or gas fired space heaters designed for commercial and industrial establishments. The 8-page booklet illustrates design and construction features, shows application and installation information and gives engineering data on the 200,000 or 250,000 Btu per hour capacity heaters.

FOR MORE DATA CIRCLE REPLY CARD NO. 21

Flywheel Sets

Allis-Chalmers Mfg. Co.—Their 200 to 10,000-kw induction motor-generator flywheel sets for supporting reversing direct-current motors in metal rolling mill and mine hoist service and similar applications are described in "Induction Motor-Generator Flywheel Sets," 05B8147. Advantages are pointed out.

FOR MORE DATA CIRCLE REPLY CARD NO. 22

Speed Reducers

Michigan Tool Co.—The chipless machining process for cold-forming splines, serrations and similar forms is presented in a 4-page illustrated bulletin. The basic concepts behind the Roto-Flo process are treated in logical step-by-step fashion.

FOR MORE DATA CIRCLE REPLY CARD NO. 23

Tooling Service

Continental Tooling Service Inc. —The Manufacturing and Electronic Division, ConRay Corp. has published "Con-Tour Notes" intended to keep you informed on the services being performed by Continental and its affiliates in the field of design, engineering, tooling, electronics, testing and production. A specially designed drilling machine and wire study service are briefly described.

FOR MORE DATA CIRCLE REPLY CARD NO. 24

Blast Cleaning

Pangborn Corp.—Newly revised Blastmaster Rotoblast Bulletin includes information on the full line of sizes, gives complete specifications and dimensions for all Blastmaster barrels from the 1½-cu-ft to the 27-cu-ft size. Various features of the machine are described. Dimensional plan views and elevations of all the machines plus maximum weight per piece, maximum weight per load and motor specifications are given.

FOR MORE DATA CIRCLE REPLY CARD NO. 25

Process Equipment

W. F. & John Barnes Co.— "Practical - Engineered Conveyor Units and Systems" briefly describes how 27 material handling problems were solved with their mechanized units. The 4-page brochure shows the range and variety of tailor-made conveyors built by them.

FOR MORE DATA CIRCLE REPLY CARD NO. 26

Buffing Lathes

Frederic B. Stevens Inc.—In addition to 10 models of constant speed polishing and buffing lathes designed for various operations, a bulletin also describes 4 models featuring variable speed operations, available in optional speed ranges. A comparative chart outlines standard specs and important features of each lathe model.

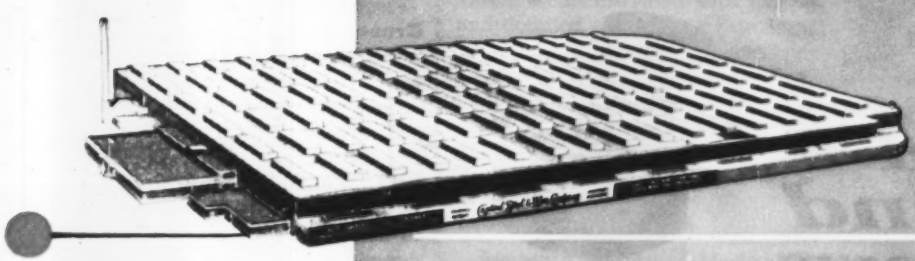
FOR MORE DATA CIRCLE REPLY CARD NO. 27

Fire Extinguishing

Walter Kidde & Co. Inc.—Their electrically operated automatic carbon dioxide fire extinguishing systems are described in detail in an 11-page brochure. A new arrangement features total enclosure of all operating parts, a simple visual inspection to determine that system has operated and a testing

STRUCTURALS

in many sizes
friction sawed, hack sawed, angle sheared
to your exact specifications



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carbon and alloy, stainless steel
copper, brass, aluminum
bars, shapes, plate
sheets, tubing

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ABRASIVE PRODUCTS, INC.
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procedure which permits actual check of all operating functions except the actual discharge of cylinders. Advantages to the user are outlined.

FOR A FREE COPY CIRCLE REPLY CARD NO. 28

Resistance Welding

Sciaky Bros. Inc.—"Resistance Welding at Work," Vol. 3, No. 9, gives a case history of electric resistance welding equipment used at Casco Products Corp. Technique of cross wire welding is described in detail. On-the-job photos illustrate the technique.

FOR A FREE COPY CIRCLE REPLY CARD NO. 29

Pressure Recorders

Foxboro Co.—A new line of pressure measuring elements are described in Bulletin 6-10. An application chart, "How to Select the Measuring Element," shows the wide choice of element materials available. Case and linkage features, charts for standard process ranges and accessories are given.

FOR A FREE COPY CIRCLE REPLY CARD NO. 30

Problem Solving

Cleveland Engineering Society —"Methods of Reasoning" is an easily read booklet containing the entire approach to the scientific method. In condensing, popularizing and clarifying the method, the author makes the entire technique of problem solving and decision making immediately available to the reader.

FOR A FREE COPY CIRCLE REPLY CARD NO. 31

Crane Electrification

Louden Machinery Co.—Their Shok-Pruf method of electrification of cranes and monorail is described in a 4-page brochure. Its advantages are outlined.

FOR A FREE COPY CIRCLE REPLY CARD NO. 32

Crane Uses

American MonoRail Co. — A series of 8 case studies brings their File No. F-2 to 28 reports on engineered application of monorail equipment. Studies included are: Delivers 25 tons of core sand per day; system reduces cost in small die shop; system for order make-up and packing; cranes handle coal and ash; cranes reduce car loading time 50 per cent. Any or all of the studies are available.

FOR A FREE COPY CIRCLE REPLY CARD NO. 33

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Surface Broaching

Colonial Broach Co.—"High-Speed Surface Broaching with the New Colonial Mechanical Horizontals," 4-page Bulletin HM-54, illustrates and describes the many salient features of this line of machines. A speed and capacity chart shows the tremendous potential the machines have for high production work. A section describes a typical application.

FOR A FREE COPY CIRCLE REPLY CARD NO. 34

Packings, Gaskets

Johns - Manville — "Chempac Packings & Gaskets," 6 pages, gives pertinent information on each of the several types of Chempac materials. Information on solid Teflon sheets, Dupont's tetrafluoroethylene resin, is also carried in the brochure.

FOR A FREE COPY CIRCLE REPLY CARD NO. 35

Safety Equipment

Mine Safety Appliances Co.—"Disaster" is designed to assist industrial plants in choosing safety and rescue equipment for use in emergencies. It assumes the existence of groups or teams within a plant whose job it is to effect rescue and recovery operations.

The brochure shows what items of equipment are needed by them.

FOR A FREE COPY CIRCLE REPLY CARD NO. 36

Automation

Reliance Electric & Engineering Co.—"Tools of Automation" gives the company's philosophy on combining applied engineering, creative thinking and electric motor drives to the automating of the single machines or continuous processes. It is designed to help you select the right motor for the job. Twelve pages include captioned photos that illustrate automation at work.

FOR A FREE COPY CIRCLE REPLY CARD NO. 37

Die Casting

National Die Casting Co. — A handy reference chart on the composition of zinc and aluminum alloys for die casting, plus a specific gravity chart are included in this brochure. Photos accompany a description of facilities for die making.

FOR A FREE COPY CIRCLE REPLY CARD NO. 38

Hard Facing Chart

Mir-O-Col Alloy Co. Inc.—A chart listing rods and electrodes produced by 29 manufacturers affords the reader a quick review of any type hard-facing rod or electrode. Abrasion and impact qualities of each type and many applications are listed.

FOR A FREE COPY CIRCLE REPLY CARD NO. 39

Forging Catalog

Cleveland Hardware & Forging Co.—Company's needing stock industrial forgings and automotive forgings, or forgings to specification can use this 40-page catalog 19A. Well illustrated with photos and detailed engineering drawings, the catalog lists dimensions, details, tables, sizes and specifications of almost every stock forging type produced for the automotive and industrial fields.

FOR A FREE COPY CIRCLE REPLY CARD NO. 40

Bearings, Lubrication

American Society of Mechanical Engineers—*Mechanical Engineering*, September issue, on the subject of "Bearings, Lubricants and Lubrication," contains a bibliography of 136 different reports on

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3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
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this subject. The digest correlates the studies under specific subject groups to simplify reference to the bibliography.

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Salt Baths

Ajax Electric Co.—A compilation of technical articles pertaining to salt bath processing that have been published in the metalworking magazines and the Ajax magazine, *Tips and Trends*, is offered.

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Facilities Brochure

Rockford Die & Tool Works Inc. —In addition to photos of grinding, drilling, milling, boring, turret lathe and inspection, this brochure shows a variety of precision tools and production parts which are designed to aid in filling customer needs. Several of the company's customers are listed for reference purposes.

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Automatic Drilling Unit

Electro-Mechano Co.—Completely redesigned automatic drilling units for small hole work are described in a 4-page bulletin. Working parts are briefly described and specifications are included.

FOR A FREE COPY CIRCLE REPLY CARD NO. 44

Plastics Specs Chart

Synthane Corp. — This updated revision is a complete tabulation of latest military and government specs for 24 grades of thermosetting laminated plastics.

FOR A FREE COPY CIRCLE REPLY CARD NO. 45

Jig, Fixture Catalog

Lodding Inc.—An 86-page catalog describes and illustrates their recently expanded line of standard jig and fixture components. Full-scale layouts of every fixture are included.

FOR A FREE COPY CIRCLE REPLY CARD NO. 46

Magnetic Steel Sheet Separators

Homer Mfg. Co. Inc.—Form SS-210, fully describing the line of steel sheet separators, is available. These sheets are said to save time, prevent accidents and increase production in the handling of round, square, nested, irregular or odd shaped stacks of steel sheets in shearing, welding, pressing, riveting or similar production operations.

FOR A FREE COPY CIRCLE REPLY CARD NO. 47

EDITORIAL REPRINTS

Diversification

Stow Mfg. Co. had a problem. It wanted to diversify its product line, but didn't know precisely how to go about it. The methods this small company evolved to solve its difficulties will give you ideas. See page 80.

FOR A FREE COPY CIRCLE REPLY CARD NO. 48

Vacuum Metals Roundups

Where should you use vacuum metals? Why? Vacuum metallurgy is only beginning to reach toward its potential applications. The process can improve characteristics of such varied metals as aluminum and nickel. For a rundown on how it can help you, see page 74.

FOR A FREE COPY CIRCLE REPLY CARD NO. 49

Better Steel Production

Producers and users of steel, after 13 years, are finding that back to normal no longer means a return to the good old days. Normal has taken on a forward look. Technological advances demand improved metals; current business conditions underline the imporance of economy. Users have a pretty firm idea of what they want. On page 136 you'll find what industry proposes to do to meet the challenge.

FOR A FREE COPY CIRCLE REPLY CARD NO. 50

Steel Expansion

Top steel executives queried by STEEL expect the new wave of steel expansion to become visible to the public in the early 1960's. They also agreed that substantial increases in capacity will have to be made to satisfy an anticipated upsurge in demand in the early sixties. Here are 16 pages of tables to show you what we have now and what to expect in the future. Beginning on page 111 are geographical and type capacity breakdowns by companies.

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4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
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9-20-54

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STEEL

September 20, 1954

Market Outlook

STEEL INGOT production is at its highest level since the end of June. Climbing 2.5 points, it reached 66 per cent of capacity in the week ended Sept. 19.

It rose because vacations are over, steel inventories are reduced and over-all business continues to be good.

STIMULI— Helping stimulate ordering of steel is the approach of new models of appliances and automobiles. So far, demand from appliance makers has been more noticeable than from automakers.

In the Chicago area, one mill stepped up its sheet production by more than 10 per cent last week, yet automotive demand isn't expected to get into full swing much before late October. This shows that other consumers, many of them small, are increasing orders. Wheeling Steel Corp. boosted operation of a hot sheet mill at Beech Bottom, W. Va., from four days a week to five. Wheeling Steel's tandem mill at Yorkville, O., where tin mill products are produced, moved up from 18 turns a week to 20, and operation of its electrolytic tin plate lines there rose from 15 turns to 20.

PROOF OF DEMAND— Reflecting the revival of appliance production and a resultant increase in demand, Inland Steel Co., Chicago, lengthened delivery time of silicon sheets to seven weeks.

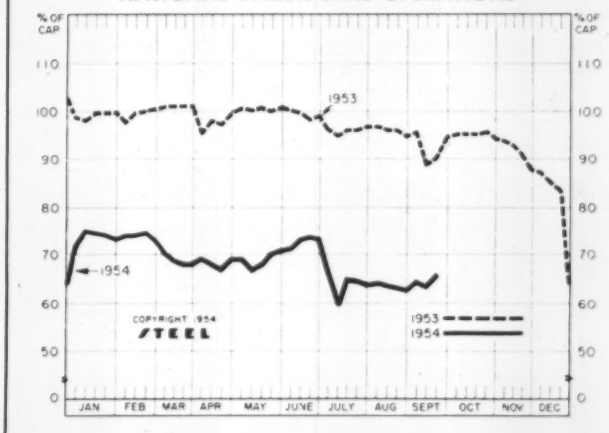
BRIGHT SPOTS— Foundries continue to show a modest upturn in business. They are suppliers to the metalworking industry and ordinarily are early to feel a change in pace of business. In Chicago, a captive foundry working on a specialty line is moving from one to two-shift operations. At Los Angeles, an influx of special jobs pushed foundries' order backlogs up to seven weeks. Foundry melting rates there average 90 per cent of capacity, with some melters near 100 per cent. In the New York area, pig iron sales to foundries are increasing somewhat over those of August. Republic Steel Corp.'s blast furnace at Troy, N. Y., resumed production of foundry iron after several weeks' suspension for lack of business. In the St. Louis area, Granite City Steel Co.'s one operating blast furnace turned to foundry iron production.

NEW PRICE SETUP— The keen competition that has been going on for steel business brought two developments pricewise: Mills announced a pricing setup for cold-rolled sheet slit into widths of from 2 to 12 inches. Until now, this material (12 inches and less in width) took the price of cold-rolled strip, a higher-priced product. The new pricing setup will save users $13 to $77 a ton when buying narrow cold-rolled slit sheet in carloads from the mill. Mills expect the new pricing schedule to capture business that has been going to processors.

PRICES CUT— The other price development was Rotary Electric Steel Co.'s reduction of prices at Detroit to Pittsburgh levels on five products—alloy forging blooms, alloy ingots, hot-rolled and cold-finished alloy bars and cold-finished carbon bars. This leaves producers in the Pittsburgh area wondering what to do. To be competitive in the Detroit market, they'll have to lower their prices or absorb more of the freight on shipments to Detroit.

STEADY— These price developments did not affect STEEL's price composite on finished steel. It remains at $177.77 a net ton.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Sept. 19	Change	Same Week 1953	Same Week 1952
Pittsburgh	65	— 0.5*	94.5	99.5
Chicago	68.5	+ 1.5*	101.5	105
Mid-Atlantic	60	+ 1	97	98
Youngstown	51.5	— 8.5	105	105
Wheeling	90	+ 20	98	98
Cleveland	77.5	+ 9.5	101	107.5
Buffalo	56	+ 9.5	26	104.5
Birmingham	75	+ 7	96	100
New England	50	0	87	82
Cincinnati	52	0	79.5	94
St. Louis	66.5	+ 7	95	101
Detroit	65	+ 1.5	101	100
Western	81	+ 3	99.5	103
National Rate	66	+ 2.5	99	102

INGOT PRODUCTION‡

	Week Ended Sept. 19	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	98.4†	93.5	91.8	128.2
NET TONS (In thousands)	1,586†	1,502	1,474	2,060

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,384,549 in 1954; 2,254,459 in 1953; 2,077,040 in 1952.

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Sept. 14 1954	Sept. 7 1954	Month Ago	Aug. Average
(1947-1949=100)	144.5	144.5	144.5	144.5

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Sept. 14

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.525	Strip, C.R., carbon	$7.507
Rails, light, 40 lb	5.917	Strip, C.R., stainless, 430 (lb)	0.415
Tie Plates	5.275	Strip, H.R., carbon	5.088
Axles, railway	7.500	Pipe, black, buttweld (100 ft)	15.000
Wheels, freight car, 33 in. (per wheel)	48.500	Pipe, galv., buttweld (100 ft)	18.507
Plates, carbon	4.675	Pipe, line (100 ft)	146.804
Structural Shapes	4.517	Casing, oil well, carbon (100 ft)	154.216
Bars, tool steel, carbon (lb)	0.430	Casing, oil well, alloy (100 ft)	227.875
Bars, tool steel, alloy, oil hardening die (lb)	0.525	Tubes, boiler (100 ft)	‡
Bars, tool steel, H.R., alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.80 (lb)	1.115	Tubing, mechanical, carbon	‡
Bars, tool steel, H.R., alloy, high speed W 18, Cr 4, V 1 (lb)	1.610	Tubing, mechanical, stainless, 304 (100 ft)	161.193
Bars, H.R., alloy	8.783	Tin, plate, hot-dipped, 1.25 lb	8.433
Bars, H.R., stainless, 303 (lb)	0.418	Tin plate, electrolytic, 0.25 lb	7.133
Bars, H.R., carbon	5.023	Black plate, can making quality	6.233
Bars, reinforcing	5.058	Wire, drawn, carbon	7.938
Bars, C.F., carbon	8.174	Wire, drawn, stainless, 430 (lb)	0.545
Bars, C.F., alloy	11.285	Bale ties (bundle)	5.860
Bars, C.F., stainless, 302 (lb)	0.433	Nails, wire, 8d common	7.815
Sheets, H.R., carbon	4.880	Wire, barbed (80-rod spool)	7.109
Sheets, C.R., carbon	5.871	Woven wire fence (20-rod roll)	16.815
Sheets, galvanized	7.140		
Sheets, C.R., stainless, 302 (lb)	0.548		
Sheets, electrical	9.350		

‡Not available.

STEEL's FINISHED STEEL PRICE INDEX*

	Sept. 15 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	194.19	194.19	194.19	189.38	152.52
Index in cents per lb.	5.261	5.261	5.261	5.130	4.132

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$117.77	$117.77	$117.77	$115.56	$91.55
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	56.54	46.10
Basic Pig Iron, GT	56.04	56.04	56.04	56.04	45.60
Malleable Pig Iron, GT	57.27	57.27	57.27	57.27	47.27
Steelmaking Scrap, GT	29.75	29.75	29.00	37.50	26.92

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Sept. 15 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.30	4.30	4.30	4.15	3.35
Bars, H.R., Chicago	4.30	4.30	4.30	4.15	3.35
Bars, H.R., del. Philadelphia	4.55	4.55	4.55	5.302	3.83
Bars, C.F., Pittsburgh	5.40	5.40	5.40	5.20	3.95
Shapes, Std., Pittsburgh	4.25	4.25	4.25	4.10	3.25
Shapes, Std., Chicago	4.25	4.25	4.25	4.10	3.25
Shapes, del., Philadelphia	4.53	4.53	4.53	4.38	3.60
Plates, Pittsburgh	4.225	4.225	4.225	4.10	3.40
Plates, Chicago	4.225	4.225	4.225	4.10	3.40
Plates, Coatesville, Pa.	4.225	4.225	4.225	4.35	3.50
Plates, Sparrows Point, Md.	4.225	4.225	4.225	4.10	3.40
Plates, Claymont, Del.	4.225	4.225	4.225	4.55	3.50
Sheets, H.R., Pittsburgh	4.05	4.05	4.05	3.925	3.25
Sheets, H.R., Chicago	4.05	4.05	4.05	3.925	3.25
Sheets, C.R., Pittsburgh	4.95	4.95	4.95	4.775	4.00
Sheets, C.R., Chicago	4.95	4.95	4.95	4.775	4.00
Sheets, C.R., Detroit	5.10	5.10	5.10	4.975	4.20
Sheets, Galv., Pittsburgh	5.45	5.45	5.45	5.275	4.40
Strip, H.R., Pitts.	4.05	4.05	4.05	4.025	3.25
Strip, H.R., Chicago	4.05	4.05	4.05	3.925	3.25
Strip, C.R., Pittsburgh	5.75	5.75	5.75	5.45-5.95	4.00
Strip, C.R., Chicago	6.00	6.00	6.00	5.70	4.00-4.15
Strip, C.R., Detroit	5.60-5.90	5.60-5.90	5.60-5.90	5.45-6.05	4.20
Wire, Basic, Pitts.	5.75	5.75	5.75	5.475-5.525	4.15
Nails, Wire, Pittsburgh	6.85	6.85	6.85	6.35-6.55	5.15
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$7.75
SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$78.00	$78.00	$78.00	$75.50	$61.00
Wire rods, ¼-⅝" Pitts.	4.675	4.675	4.675	4.525	3.40
PIG IRON, Gross Ton					
Bessemer, Pitts.	$57.00	$57.00	$57.00	$57.00	$47.00
Basic, Valley	56.00	56.00	56.00	56.00	46.00
Basic, deld. Phila.	49.66	49.66	49.66	60.75	49.44
No. 2 Fdry, Pitts.	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Valley	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, del. Phila.	50.16	50.16	50.16	61.25	49.94
No. 2 Fdry, Birm.	52.88	52.88	52.88	52.88	39.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	60.43	45.43
Malleable, Valley	56.50	56.50	56.50	56.50	46.50
Malleable, Chicago	56.50	56.50	56.50	56.50	46.50
Ferromanganese, Duquesne	190.00†	190.00†	200.00†	200.00†	175.00*

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$30.50	$30.50	$29.50	$40.50	$29.75
No. 1 Heavy Melt, E. Pa.	28.75	28.75	27.50	36.50	24.50
No. 1 Heavy Melt, Chicago	30.00	30.00	30.00	35.50	26.50
No. 1 Heavy Melt, Valley	32.50	32.50	30.50	36.50	29.50
No. 1 Heavy Melt, Cleve.	28.50	28.50	28.50	33.50	25.00
No. 1 Heavy Melt, Buffalo	26.50	26.50	26.50	39.50	26.25
Rails, Rerolling, Chicago	44.50	44.50	44.50	52.00	41.50
No. 1 Cast, Chicago	35.50	35.50	35.50	35.00	41.50
COKE, Net Ton					
Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$13.25
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	16.75	15.75
Oven Fdry, Chicago	24.50	24.50	24.50	24.50	20.00

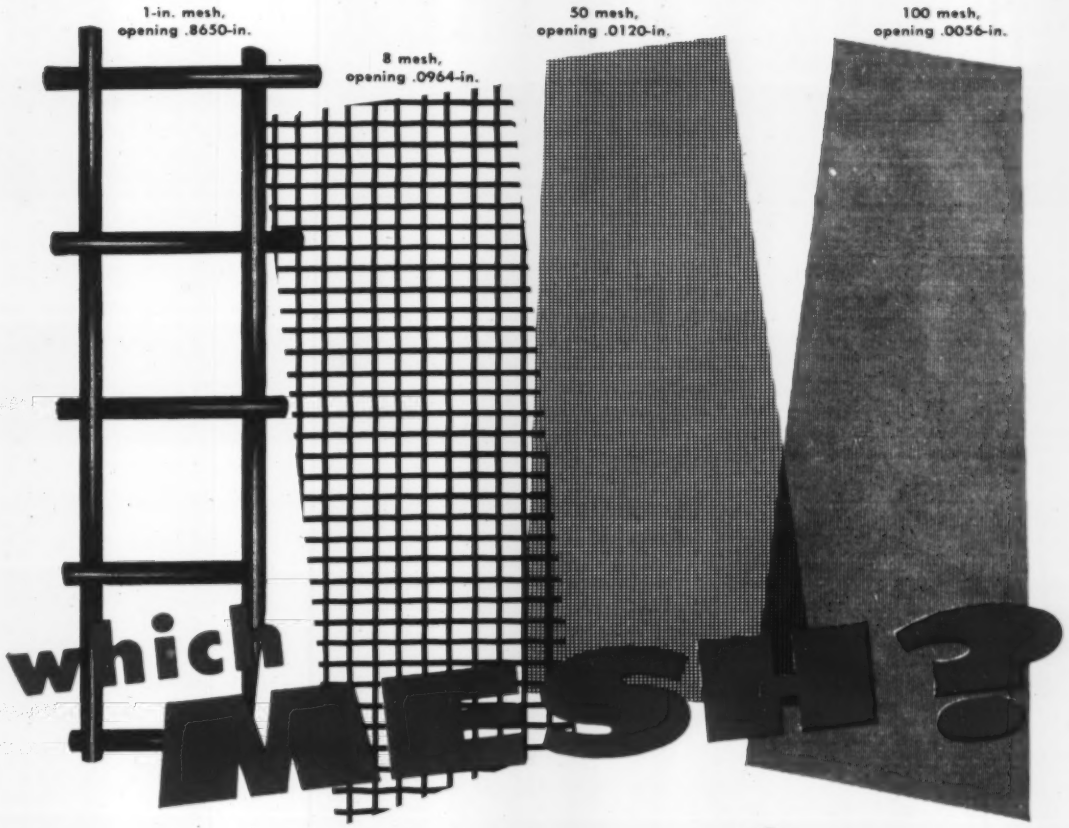
Daily Nonferrous Price Record

	Price Sept. 8	Last Change	Previous Price	Aug. Avg.	July Avg.	Sept. 1953 Avg.
Copper	30.00	Apr. 12	29.75-30.00	30.000	30.000	29.50
Lead	14.55	Sept. 15	14.30	13.846	13.800	13.540
Zinc	11.50	Sept. 3	11.00	11.000	11.000	10.180
Tin	93.50	Sept. 15	92.75	93.332	96.562	82.410
Nickel	60.00	Jan. 14, 1953	56.50	60.000	60.000	60.000
Aluminum	22.20	Aug. 5, 1954	21.50	22.119	21.500	21.500
Magnesium	27.00	Mar. 9, 1953	24.50	27.000	27.000	27.000

Quotations in cents per pound based on: Copper, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99+ %, del.; Magnesium 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

- **A source of price information.** Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- **A directory of producing points.** Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.
- **A source of price data for making your own comparisons.** Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.
- **A source of information on market trends.** Newsy items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.
- **Reports on iron and steel production, and materials and product shipments.**



...or wire
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...or metal

Mesh is the number of openings per lineal inch, measured from the center of any wire. It is only *one* of many factors to be determined in finding the right industrial wire cloth to fit precisely the job it must do in your product.

Then there's the question of the gauge, metal or alloy, and coating of the wire. The weave, weight, strength, flexibility, resistance to atmospheric and chemical corrosion of the cloth itself. And more.

If it is Reynolds industrial wire cloth it will be *right*—precision processed to your specifications.

Or, if you have wire cloth problems, Reynolds Engineers are ready to help you find the right answer.

Details in Sweet's product design file

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ATHENIA STEEL...*Clifton, N. J.*	Flat, High Carbon, Cold Rolled Spring Steel
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WAGNER LITHO MACHINERY...*Jersey City, N. J.*	Metal Decorating Equipment
WORCESTER WIRE WORKS...*Worcester, Mass.*	Round and Shaped Steel Wire, Small Sizes

Nonferrous Metals

Metals show price strength with copper, lead and zinc leading the way. Strike pattern in copper may put pinch on supply unless government releases some of its stockpile

Nonferrous Metal Prices, Pages 210 and 211

INDUSTRY is now paying more for metals than at any time this year, and the price pressure on three of them—copper, lead and zinc—hasn't abated yet.

Copper's Constrictions—While copper is still pegged at 30 cents by mine producers and custom smelters, dealers are getting as much as a cent per pound more for spot deliveries of the moderate tonnages they command. Chilean copper is reportedly being grabbed up in European markets at the New York equivalent of 31 cents a pound.

The supply pinch stands to worsen greatly unless stockpile copper is released to industry. There's already talk of borrowing government metal to tide fabricators over the critical period ahead. Appeals should follow soon, but odds are against action until domestic strikes are resolved.

Off and On—Copper producers must feel that settlement of one dispute is the signal for a walkout elsewhere. As soon as Phelps Dodge Corp.'s workers went back on the job at the company's big El Paso, Tex., refinery (with a 7-cent package increase), American Smelting & Refining Co.'s Garfield, Utah, smelter was closed. Anaconda's Montana properties and the Arizona mines of Inspiration Consolidated Copper and Miami Copper are still idled. Two big mines in Chile are closed.

Total mine output loss at home and abroad exceeds 1000 tons daily. Especially embarrassing to copper and brass men is the appearance of this crisis just as a campaign is getting under way to convince industry copper is plentiful.

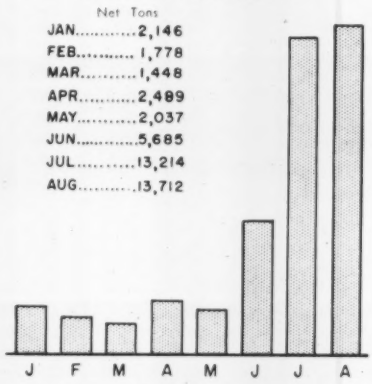
Zinc's Revival—Gap between zinc production and shipments is narrowing as users come to market for their fall needs without flinching at the half-cent price hike posted Sept. 3. The upturn is not so much related to stronger user activity as to protection against further advances. Zinc is now 2.25 cents above its 1954 low. Further advances are predicted by purchasing agents in placing orders at a flat price.

Government buying for stockpile is stimulating price by whittling surplus stocks substantially. Close to 20,000 tons were contracted for in the latest buying spree. General Services Administration's authority to buy over 30 per cent of the industry's entire smelter output can't help but have a continuing effect on the market and price.

Lead's Ahead—Booking orders for October lead at flat prices indicates the strain on the present price. London quotations moved above U. S. equivalents last week, and a further gain there will surely push up the price here. As with zinc, consumers are buying more to cover against this possibility than because of better business.

GOVERNMENT STOCKPILING TAKES MORE SLAB ZINC

Deliveries by Smelters



Source: American Zinc Institute

Strength abroad is attributed to settlement of the U. S. tariff issue, plus anticipation of bartering foreign metal for our surplus farm products.

Aluminum Over Million Mark . . .

The millionth ton of primary aluminum produced in 1954 was poured last week. Last year the magic number wasn't reached until late October. In 1952 it was never reached. Entering this month, 966,857 tons had been turned out. August production was 125,296 tons, slightly under a record July.

Aluminum product shipments in July reflected the vacation lull in metalworking. Declines from June were registered by sheet and plate, extruded products, tube, rod and bar, forgings and all classes of castings. Gains were shown only in foil, wire other than conductor and ACSR and bare cable.

No Damper for Tungsten . . .

Domestic tungsten mining boom is still in full swing, though market strength is absent. In the first half production soared 42 per cent above the same period in 1953. Last year's turnout of 8,991,000 pounds of contained tungsten was 24 per cent over 1952 and the highest level since 1944.

For the first time in 15 years consumption last year fell below domestic production by 14 per cent, and the trend has continued into 1954. Tungsten imports last year were highest in history. The 27,684 tons brought in was almost four times total U. S. consumption, but about 40 per cent of it went to government stockpiles. Government stockpile purchases are now running at an average rate of 81,883 units of tungsten monthly. If this average is maintained, the stockpile goal of 3 million units will be reached in May, 1956, estimates the Tungsten Institute.

Market Memos . . .

- Price-fixing charges against ten Canadian wire and cable manufacturers will go to court in December. Defendants represent nearly the entire $124-million industry north of the border, and several are subsidiaries of U. S. firms.
- Malayan tin miners approved a proposal to reduce from $1.10 to $1.05 a pound the ceiling price on tin set by the International Tin Agreement.
- A 22½-by-21¼-inch Philco television receiver screen frame is being successfully die cast of zinc in a high-speed operation.
- Mercury prices continue their upward rush as speculation mounts on where the metal is being put to use.
- Fourteen new inorganic tin chemicals are being marketed by Metal & Thermit Corp. for experimental and commercial purposes.
- Business & Defense Services Administration will get the job of assisting businessmen seeking to negotiate barter transactions of U. S. farm surpluses for foreign materials and goods.
- Removal of tariffs on strategic metals and minerals was urged by Rep. Emanuel Celler (Dem., N. Y.) in hearings last week in Washington.

COPPER DETERMINATION

Alloymet 2030 (65% Nickel 30% Copper 5% Iron)*

A product of close Metallurgical CONTROL
for the production of low alloy steel and gray iron

Pre-alloyed master alloys are leaving an indelible mark on the iron and steel industry. The element of human error is reduced many fold, since a single alloying agent, *ALLOYMET* 2030 ingot or shot, can replace many separate inoculants. A single trial of Alloymet 2030 or its companion alloys will make you an "Alloymet regular."

For further information, write us for our booklet, "Master Alloys."

*Nominal Chemical Composition

ALTER COMPANY
Alloy Metal Division

1701 Rockingham Road, DAVENPORT, IOWA
Phone 6-2561 Teletype DV 588

Nonferrous Metals

Cents per pound, carlots, except as otherwise noted

PRIMARY METALS AND ALLOYS

Aluminum: 99+%, ingots 22.20, pigs 20.50 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 24; No. 43, 5% Si, 23.8; No. 142, 4% Cu, 25.1; No. 195, 4.5% Cu, 0.8% Si, 24.5; No. 214, 3.8% Mg, 25.2; No. 356, 7% Si, 0.3% Mg, 23.9.

Antimony: R.M.M. brand, 99.5% 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.; Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb del.

Cobalt: 97-99%, $2.60 per lb for 550 lb keg; $2.62 per lb for 100 lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 30.00 del. Conn. Valley, 30.00 del. Midwest; Lake 30.00 del; Fire refined 29.75 del.

Germanium: 99.9%, $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $145-$150 per troy oz.

Lead: Common 14.55, chemical 14.65, corroding 14.65, St. Louis; N. Y. basis, add 0.20.

Lithium: 98%, $11-$14 per lb, depending on quantity.

Magnesium: 99.8%, self-palletizing pig 27.00; notched ingot 27.75, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., and Madison, Ill., add 1.20 for pig and 1.25 for ingot. Sticks, 1 3 in. diameter, 46.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R 32.50; alloy M 34.50, 10,000 lb or more f.o.b. Freeport, Tex., or Madison, Ill. Add 1.20 for Port Newark, N. J.

Mercury: Open market, spot, New York, $293-$298, nom., per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3.40 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or ingots for addition to cast iron, 60.00; prices f.o.b. Port Colborne, Ont., including import duty, New York basis, add 0.92.

Osmium: $140-$150 per troy oz nom.

Palladium: $21 per troy oz.

Platinum: $84-$87 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $75-$80 per troy oz.

Selenium: 99.5%, $5-$6 per lb.

Sodium: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $39.00 per lb; powder $33.50 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot and prompt, 93.5.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max) $4.72; grade A-2 (0.5% Fe max) $4.46 per pound.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots $4.95 per lb, f.o.b. shipping point; less than 1000 lb $5.10 99+% hydrogen reduced, $4.65. Treated ingots $6.70.

Zinc: Prime Western 11.50, brass special 11.75, intermediate 12.00, E. St. Louis, freight allowed over 0.50 per pound. High grade 12.85, special high grade 13.00, die casting alloy ingot 15.50, del.

Zirconium: Sponge $10 per lb; powder electronics grade $15, flash grade $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston Alloy 20.75-21.25; No. 12 foundry alloy (No. 2 grade) 19.75-20.25; 5% silicon alloy, 0.60 Cu max., 23.25-23.50; 13 alloy, 0.60 Cu max., 23.25-23.50; 195 alloy 21.25-22.25; 108 alloy 20.25-20.75; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 21.00-21.50; grade 2, 20.00-20.50; grade 3, 19.00-19.50; grade 4, 18.00-18.50.

Brass Ingot: Red brass, No. 115, 28.50; tin bronze No. 225, 40.00; No. 245, 33.75; high-leaded tin bronze, No. 305, 33.00; No. 1 yellow, No. 405, 24.25; manganese bronze No. 421, 26.75.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 27.00; AZ91C, 31.50; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.68; rod, bar, wire, $1.65.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c.l. 37.03. Magnet wire del., 15,000 lb or more 41.83; l.c.l. 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $19.00 per cwt; pipe, full coils $19.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $11; forging billets $6; hot-rolled and forged bars, $6.

ZINC

(Prices per lb c.l., f.o.b. mill) Sheets 23.00, ribbon zinc in coils, 18.50-20.50; plates 18.00-22.25.

ZIRCONIUM

Plate $27; H.R. strip $28; C.R. strip $35; forged or H.R. bars $27; wire, 0.015 in., 1 cent per linear foot.

	NICKEL, "A" Nickel	MONEL, Monel	INCONEL, Inconel
Sheet, C.R.	86.5	67.5	92.5
Strip, C.R.	92.5	70.5	98.5
Plate, H.R.	84.5	66.5	90.5
Rod, Shapes	82.5	65.5	88.5
Seamless Tubes	115.5	100.5	137.5
Shot, Blocks	...	60.0	...

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or across flats	Round 11S-T3	Round 17S-T4	Hexagonal 11S-T3	Hexagonal 17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.9	46.2	...	56.8
Cold-finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Sheets and Circles: 2S and 3S mill finish c.l. (30,000 lb base; freight allowed over 499 lb)

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	12-49	34.9	...	...
0.135-0.096	12-48	35.4	...	...
0.095-0.077	12-48	36.1	33.6	38.6
0.076-0.061	12-48	36.7	33.8	38.8
0.060-0.048	12-48	37.2	34.1	39.2
0.047-0.038	12-48	37.7	34.6	39.6
0.037-0.030	12-48	38.1	35.0	40.3
0.029-0.024	12-48	38.7	35.3	40.8
0.023-0.019	12-36	39.4	36.1	41.6
0.018-0.017	12-36	40.2	36.7	42.5
0.016-0.015	12-36	41.1	37.5	43.7
0.014	12-24	42.1	38.5	45.0
0.013-0.012	12-24	43.3	39.2	46.0
0.011	12-24	44.3	40.4	47.6
0.010-0.0095	12-24	45.5	41.5	49.2
0.009-0.0085	12-24	46.8	43.0	51.3
0.008-0.0075	12-24	48.4	44.2	53.1
0.007	12-18	49.9	45.7	55.4
0.006	12-18	51.5	47.1	60.4

*72-180 in. lengths. †26 in. max. dia.

ALUMINUM

Plates and Circles: Thickness 0.250-3.0 in., 24-60 in. width or dia, 72-240 in. lengths.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	34.7	38.9
50S-F	34.7	38.9
4S-F	35.7	40.6
52S-F	37.4	42.4
61S-T6	38.6	43.0
24S-T4*	40.8	46.9
75S-T6*	48.6	55.2

*24-48 in. widths or dia., 72-180 in. lengths.

ALUMINUM

Forging Stock: Round, Class 1, 43.8-34.4, in specific lengths 36-144 in., diameters 0.375-8 in.; rectangles and squares, Class 1, 50.2-38.4 in random lengths 0.375-4.0 in. thick, widths 0.750-10.0 in.

Pipe: A.S.A. Schedule 40, alloy 63S-T6, 20 ft length, plain ends; 90,000 lb base, per 100 ft.

Nom. pipe size, in.		Nom. pipe size, in.	
¾	$15.05	2	$ 46.30
1	23.65	4	127.70
1¼	32.00	6	228.50
1½	38.25	8	343.80

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 94.00, 0.064-in. 73.00, 0.125-in. 60.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot rolled AZ31, 53.00, 20,000 lb or more 0.250-in. and over, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 59.00, 20,000 lb or more, ¼-in. thick, widths 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00, Rod, 1 in. 66.00, 2 in. 62.50, Tubing, 1 in. OD x 0.065-in., 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ¼-in. 67.00, Channels, 5 in. 67.80, I-Beams, 5 in. 66.20.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 2S clippings 13.50; low copper clippings 13.50; mixed clippings 11.50; old sheet 10.50; borings and turnings 6.50; pistons and struts 8.00; crankcases 10.50; industrial castings 10.50.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.38b	45.98c	....	48.44	26.000	26.000	25.250
Yellow Brass	41.72	34.50d	42.26	44.63	19.750	19.500	18.000
Red Brass, 85%	45.44	45.38	45.98	48.25	23.000	22.750	22.250
Low Brass, 80%	44.47	44.41	45.01	47.28	22.125	21.875	21.375
Naval Brass	45.76	40.07	52.80	48.92	18.250	18.000	17.500
Commercial Bronze, 90%	46.95	46.89	47.49	49.51	23.875	23.625	23.125
Nickel Silver, 10%	55.36	59.43g	57.69	....	23.625	23.375	11.813
Phosphor Bronze, A, 5%	66.58	67.08	67.08	68.23	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.75	70.11e	25.125	24.875	24.125
Manganese Bronze	49.48	43.62	54.06	....	18.250	18.000	17.500
Muntz Metal	43.96	39.77	....	....	18.625	18.375	17.875

a. Cents per lb f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

Copper and Brass: Heavy copper and wire, No. 1 24.50-25.00; No. 2 copper 23.00-23.25; light copper 21.00-21.25; No. 1 composition red brass 19.00-19.50; No. 1 composition turnings 18.50-19.00; mixed brass turnings 11.50-12.00; new brass clippings 18.00; No. 1 brass rod turnings 15.00; light brass 11.50-12.00; heavy yellow brass 14.00; new brass rod ends 16.00; auto radiators, unsweated 15.00; cocks and faucets 16.00-16.50; brass pipe 16.50-17.00.

Lead: Heavy 11.50-11.75; battery plate 6.25-6.50; linotype and stereotype 13.50-13.75; electrotype 11.75-12.00; mixed babbitt 12.50-12.75.

Magnesium: Clippings 18.50-19.50; clean castings 17.50-18.50; iron castings, not over 10% removable Fe, 16.50-17.50.

Monel: Clippings 23.00-25.00; old sheet 21.00-23.00; turnings 16.00-18.00; rods 23.00-25.00.

Nickel: Sheets and clips 60.00-65.00; rolled anodes 60.00-65.00; turnings 40.00; rod ends 60.00-65.00.

Tin: No. 1 pewter 55.00-60.00; block tin pipe 75.00-80.00; No. 1 babbitt 50.00.

Zinc: Old zinc, 5.00-5.25; new die cast scrap, 4.75-5.00; old die cast scrap, 3.25-3.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 2S, 3S clippings 15.50-15.75; 51S, 52S clippings 15.25-15.75; 14S, 17S, 24S clippings 14.50-14.75; mixed clipping 14.00-14.50; old sheet 13.00-13.50; old cast 13.00-13.50; clean old cable, free of steel 15.00-15.75; borings and turnings 13.25-13.75.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper, Brass: No. 1 copper 27.25; No. 2 copper 25.75; light copper 24.25; refinery brass (60% copper) per dry copper content 24.25.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 27.00; No. 2 copper 25.25-25.50; light copper 23.75-24.00; No. 1 composition borings 20.50-21.00; No. 1 composition solids 21.50-22.00; heavy yellow brass solids 17.00-17.50; yellow brass turnings 16.00-16.50; radiators 18.00-18.25.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $1.70 per lb.

Copper: Flat-rolled 45.04, oval 44.54, 2000-5000 lb; electrodeposited 39.78, cast 42.04, 5000-10,000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb $1.115; 200-499 lb $1.10; 500-999 lb $1.095; 1000 lb or more $1.09.

Zinc: Bar 18.50, bar or flat top 17.50 ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 10,000 lb 28.50; over 10,000 lb 27.50.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,000 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.50; 25,000 oz and over 77.325.

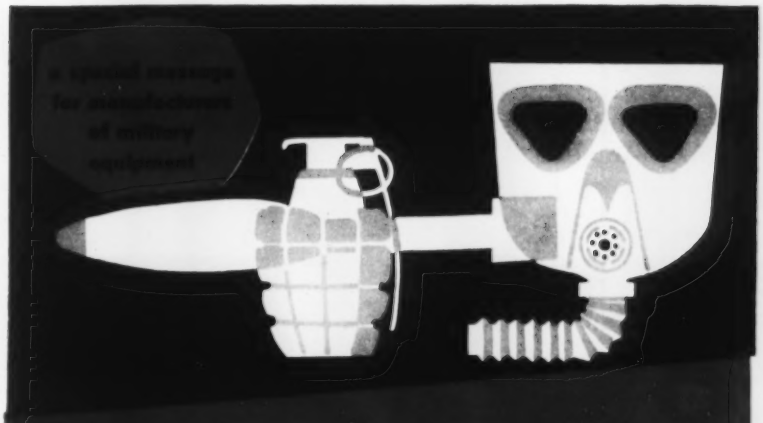
Sodium Cyanide: Egg, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb 71; 100-600 lb 56.7; 700-1900 lb 54.3; 2000-9900 lb 52.5; 10,000 lb or more 51.4.

Stannous Chloride: (Anhydrous): Less than 50 lb $1.57; 50 lb $1.23; 100-300 lb $1.08; 400-900 lb $1.055; 100-1900 lb $1.031; 2000-4900 lb 99.4; 5000-19,000 lb 99.3; 20,000 lb and over 87.2.

Stannous Sulphate: Less than 5 lb $1.269; 50 lb 96.9; 100-1900 lb 94.9; 2000 lb and over 92.9.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.



need a finish to beat these specs?

specify IRIDITE

AN-C-170 MIL-S5002 MIL-C-5541 AN-P32
AMS-2402A USA-50-80-11A J.Q.D. No. 144B
USA 57-93-2A O.S. No. 1374 USA 57-0-2C AN-P61
A-XS-1607 QQ-P-416 QQ-Z-325 MIL-3151
if you're finishing under these or similar specifications, here's how you can use Iridite:

ON ZINC AND CADMIUM you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.

ON COPPER . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.

ON ALUMINUM Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

ON MAGNESIUM Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on page 213. Key to footnotes, page 215.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 .....$61.50

INGOTS, Alloy (NT)

Detroit R7 ..... $65.00
Houston S5 .....73.00
Midland,Pa. C18 .....65.00
Munhall,Pa. U5 .....65.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)

Aliquippa,Pa. J5 ....$64.00
Bessemer,Pa. U5 .....64.00
Buffalo R2 .....64.00
Clairton,Pa. U5 .....64.00
Ensley,Ala. T2 .....64.00
Fairfield,Ala. T2 .....64.00
Fontana,Calif. K1 ....72.00
Gary,Ind. U5 .....64.00
Johnstown,Pa. B2 ....64.00
Lackawanna,N.Y. B2 ..64.00
Munhall,Pa. U5 .....64.00
So.Chicago,Ill. R2,U5 ..64.00
So.Duquesne,Pa. U5 ..64.00
Youngstown R2 .....64.00

Carbon, Forging (NT)

Aliquippa,Pa. J5 ....$78.00
Bessemer,Pa. U5 ....78.00
Buffalo R2 .....78.00
Canton,O. R2 .....80.00
Clairton,Pa. U5 .....78.00
Conshohocken,Pa. A3 ..83.00
Ensley,Ala. T2 .....78.00
Fairfield,Ala. T2 ....78.00
Fontana, Calif. K1 ....86.00
Gary,Ind. U5 .....78.00
Geneva,Utah. C11 ....78.00
Houston S5 .....85.00
Johnstown,Pa. B2 ....78.00
Lackawanna,N.Y. B2 ..78.00
Los Angeles B3 .....87.50
Munhall,Pa. U5 .....78.00
Seattle B3 .....91.50
So.Chicago R2,U5,W14 ..78.00
So.Duquesne,Pa. U5 ..78.00
So.SanFrancisco B3 ...87.50

Alloy, Forging (NT)

Bethlehem,Pa. B2 ....$86.00
Buffalo R2 .....86.00
Canton,O. R2, T7 ....86.00
Conshohocken,Pa. A3 ..93.00
Detroit R7 ..... 86.00
Fontana,Calif. K1 ....105.00
Gary,Ind. U5 .....86.00
Houston S5 .....93.00
Ind.Harbor,Ind. Y1 ..86.00
Johnstown,Pa. B2 ....86.00
Lackawanna,N.Y. B2..86.00
LosAngeles B3 .....106.00
Massillon,O. R2 .....86.00
Midland,Pa. C18 .....86.00
Munhall,Pa. U5 .....86.00
So.Chicago R2,U5,W14 ..86.00
So.Duquesne,Pa. U5 ...86.00
Struthers,O. Y1 .....86.00
Warren,O. C17 .....86.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 .....$96.50
Canton,O. R2 .....96.50
Cleveland R2 .....96.50
Gary,Ind. U5 .....96.50
So.Chicago R2, W14 ..96.50
So.Duquesne,Pa. U5 ..96.50

SKELP

Aliquippa,Pa. J5 .....4.00
Fontana,Calif. K1 ....4.775
Munhall,Pa. U5 .....3.90
Warren,O. R2 .....3.90
Youngstown R2, U5 ....3.90

WIRE RODS

AlabamaCity,Ala. R2 ..4.675
Aliquippa,Pa. J5 .....4.675
Alton,Ill. L1 .....4.85
Buffalo B11, W12 ....4.675
Cleveland A7 .....4.675
Donora,Pa. A7 .....4.675
Fairfield,Ala. T2 ....4.675
Fontana,Calif. K1 ....5.475
Houston S5 .....5.075
IndianaHarbor,Ind. Y1 4.675
Johnstown,Pa. B2 ....4.675
Joliet,Ill. A7 .....4.675
KansasCity,Mo. S5 ....5.015
Kokomo,Ind. C16 ....4.775
LosAngeles B3 .....5.475
Minnequa,Colo. C10 ...4.925
Monessen,Pa. P7 .....4.675
No.Tonawanda,N.Y. B11 4.675
Pittsburg,Calif. C11 ..5.325
Portsmouth P12 .....4.675
Roebling,N.J. R5 .....4.775
So.Chicago,Ill. R2 ....4.675
Sterling,Ill.(1) N15 ....4.675
Sterling,Ill. N15 .....4.775
Struthers,O. Y1 .....4.675
SparrowsPoint,Md. B2 4.775
Torrance,Calif. C11 ...5.475
Worcester,Mass. A7 ..4.975

STRUCTURALS

Carbon Steel Stand. Shapes

Aliquippa,Pa. J5 .....4.25
Bessemer,Ala T2 .....4.25
Bethlehem,Pa. B2 .....4.30
Birmingham C15 .....4.25
Clairton,Pa. U5 .....4.25
Fairfield,Ala. T2 .....4.25
Fontana,Calif. K1 .....4.90
Gadsden,Ala (31) R2 ..4.28
Gary,Ind. U5 .....4.25
Geneva,Utah C11 .....4.25
Houston S5 .....4.65
Ind.Harbor,Ind. I-2 ....4.25
Johnstown, Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.85
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....4.95
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....4.25
Niles,Calif. P1 .....4.80
Phoenixville,Pa. P4 ....3.95
Seattle B3 .....5.00
So.Chicago U5, W14 ...4.25
So.SanFrancisco B3 ....4.90
Torrance,Calif. C11 ....4.95
Weirton,W.Va. W6 ....4.25

Wide Flange

Bethlehem,Pa. B2 .....4.30
Clairton,Pa. U5 .....4.25
Fontana,Calif. K1 .....5.25
Lackawanna,N.Y. B2 ..4.30
Munhall,Pa. U5 .....4.25
Phoenixville,Pa. P4 ....3.95
So.Chicago,Ill. U5 ....4.25

Alloy Stand. Shapes

Clairton,Pa. U5 .....5.20
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.20
Houston S5 .....5.60
Munhall,Pa. U5 .....5.20
So.Chicago,Ill. U5 .....5.20

H.S., L.A. Stand. Shapes

Aliquippa,Pa. J5 .....6.40
Bessemer,Ala. T2 .....6.40
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.40
Fairfield,Ala. T2 .....6.40
FontanaCalif. K1 .....7.05
Gary,Ind. U5 .....6.40
Geneva,Utah, C11 .....6.40
Houston S5 .....6.80
Ind.Harbor,Ind. I-2, Y1..6.40
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 .....7.00
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.10
Munhall,Pa. U5 .....6.40
Seattle B3 .....7.15
So.Chicago,Ill. U5, W14..6.40
So.SanFrancisco B3 ....7.05
Struthers,O. Y1 .....6.40

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ...6.45
Munhall,Pa. U5 .....6.40
So.Chicago,Ill. U5 .....6.40

PILING

BEARING PILES

Munhall,Pa. U5 .....4.25
So.Chicago,Ill. U5 .....4.25

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ...5.075
Lackawanna,N.Y. B2 ..5.075
Munhall,Pa. U5 .....5.075
So.Chicago,Ill U5 ....5.075

PLATES

PLATES, Carbon Steel

Aliquippa,Pa. J5 .....4.225
Ashland,Ky.(15) A10 ..4.225
Bessemer,Ala. T2 .....4.225
Buffalo(31) R2 .....4.255
Clairton,Pa. U5 .....4.225
Claymont,Del. C22 ....4.225
Cleveland J5 .....4.225
Cleveland(31) R2 .....4.285
Coatesville,Pa. L7 .....4.225
Conshohocken,Pa. A3 ..4.225
Ecorse,Mich. G5 .....4.375
Fairfield,Ala. T2 .....4.225
Gadsden,Ala.(31) R2 ..4.255
Fontana,Calif.(30) K1.4.875
Gary,Ind. U5 .....4.225
Geneva,Utah C11 .....4.225
GraniteCity,Ill. G4 ....4.425
Harrisburg,Pa. C5 ....3.975
Houston S5 .....4.625
Ind.Harbor,Ind. I-2, Y1 4.225
Johnstown,Pa. B2 .....4.225
Lackawanna,N.Y. B2 ..4.225
LoneStar,Tex. L6 .....4.40
Mansfield,O. E6 .....4.225
Minnequa,Colo. C10 ...5.075
Munhall,Pa. U5 .....4.225
Newport,Ky. N9 .....4.225
Pittsburgh J5 .....4.225
Riverdale,Ill. A1 .....4.225
Seattle B3 .....5.125
Sharon,Pa. S3 .....4.225
So.Chicago,Ill.(31) R2..4.295
So. Chicago,Ill U5,W14.4.225
SparrowsPoint,Md. B2..4.225
Steubenville,O. W10 ...4.225
Warren,O.(31) R2 .....4.265
Weirton,W.Va. W6 .....4.225
Youngstown(31) R2 .....4.275
Youngstown U5, Y1 ...4.225

PLATES, Carbon Abras. Resist.

Fontana,Calif. K1 ....6.025
Geneva,Utah C11 .....5.375

PLATES, Wrought Iron

Economy,Pa. B14 .....9.80

PLATES,High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland J5, R2 .....6.45
Conshohocken,Pa. A3 ..6.45
Ecorse,Mich. G5 .....6.60
Fairfield,Ala. T2 .....6.45
Fontana,Calif.(30) K1 ..7.15
Gary,Ind. U5 .....6.45
Geneva,Utah C11 .....6.45
Houston S5 .....6.85
Ind.Harbor,Ind. I2, Y1.6.45
Johnstown,Pa. B2 .....6.45
Lackawanna,N.Y. B2...6.45
LosAngeles B3 .....7.35
Munhall,Pa. U5 .....6.45
Pittsburgh J5 .....6.45
Seattle B3 .....7.35
Sharon,Pa. S3 .....6.45
So.Chicago,Ill. U5, W14..6.45
SparrowsPoint,Md. B2..6.45
Youngstown U5, Y1.....6.45

PLATES, Alloy

Claymont,Del. C22 .....5.80
Coatesville,Pa. L7 .....5.80
Fontana,Calif. K1 .....6.45
Gary,Ind. U5 .....5.80
Houston S5 .....6.20
Johnstown,Pa. B2 .....5.80
Munhall,Pa. U5 .....5.80
Newport,Ky. N9 .....5.80
Seattle B3 .....6.70
Sharon,Pa. S3 .....5.80
So.Chicago,Ill. U5, W14..5.80
SparrowsPoint,Md. B2 ..5.80

FLOOR PLATES

Cleveland J5 .....5.275
Conshohocken,Pa. A3 ..5.275
Harrisburg,Pa. C5 .....5.15
Ind.Harbor,Ind. I-2 ...5.275
Munhall,Pa. U5 .....5.275
So.Chicago,Ill. U5 .....5.275

PLATES, Ingot Iron

Ashland c.l. (15) A10..4.475
Ashland l.c.l. (15) A10.4.975
Cleveland c.l. R2 .....4.825
Warren,O. c.l. R2 .....4.825

BARS

BARS, Hot-Rolled Carbon

Aliquippa,Pa. J5 .....4.30
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....4.30
Birmingham C15 .....4.30
Buffalo(31) R2 .....4.33
Canton,O.(31) R2 .....4.46
Clairton,Pa. U5 .....4.30
Cleveland(31) R2 .....4.36
Ecorse,Mich. G5 .....4.45
Emeryville,Calif. J7 ...5.05
Fairfield,Ala. T2 .....4.30
Fairless,Pa. U5 .....4.45
Fontana,Calif.K1 .....5.00
Gary,Ind. U5 .....4.30
Gadsden,Ala.(31) R2 ...4.33
Houston S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.90
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....5.00
Massillon,O.(31) R2 ....4.46
Milton,Pa. M18 .....4.30
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.85
N.Tonawanda,N.Y. B11.4.30
Pittsburgh, Calif. C11 ....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
Seattle B3, N14, P23 ...5.05
So.Chicago(31) R2 .....4.37
So.Chicago U5, W14 ....4.30
So.Duquesne,Pa. U5 ....4.30
SoSanFran.,Calif. B3 ..5.05
Sterling,Ill.(1) N15 ....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Warren,O. (31) R2 .....4.34
Weirton,W.Va. W6 .....4.30
Youngstown U5 .....4.30
Youngstown(31) R2 ....4.35

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 ....5.075
Buffalo(31) R2 .....5.105
Canton,O. T7 .....5.075
Canton,O.(31) R2 .....5.115
Chicago(31) R2 .....5.145
Clairton,Pa. U5 .....5.075
Detroit R7 ..... 5.075
Ecorse,Mich. G5 .....5.225
Fontana,Calif. K1 ....6.125
Fairless,Pa. U5 .....5.225
Gary,Ind. U5 .....5.075
Houston S5 .....5.475
Ind.Harbor,Ind. I-2, Y1 5.075
Johnstown,Pa. B2 ....5.075
KansasCity,Mo. S5 ....5.675
Lackawanna,N.Y. B2..5.075
LosAngeles B3 .....6.125
Massillon,O.(31) R2 ...5.115
Midland,Pa. C18 .....5.075
So.Chicago U5, W14 ..5.075
So.Duquesne,Pa. U5 ..5.075
Struthers,O. Y1 .....5.075
Warren,O. C17 .....5.075
Youngstown U5 .....5.075

BARS & SMALL SHAPES, H.R.
High-Strength Low-Alloy

Aliquippa, Pa. J5 .....6.45
Bessemer,Ala T2 .....6.45
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland(31) R2 .....6.45
Ecorse,Mich. G5 .....6.60
Fairfield,Ala. T2 .....6.45
Fontana,Calif. K1 .....7.70
Gary,Ind. U5 .....6.45
Houston S5 .....6.85
Ind.Harb.,Ind. I-2, Y1.6.45
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 .....7.05
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.15
Pittsburgh J5 .....6.45
Seattle B3 .....7.20
So.Chicago W14 .....6.45
So.Duquesne,Pa. U5 ...6.45
So.SanFrancisco B3 ....7.20
Struthers,O. Y1 .....6.45
Warren,O.(31) R2 .....6.45
Youngstown U5 .....6.45

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa. B2 .....4.45

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 .....4.30
Atlanta A11 .....4.50
Fontana,Calif. K1 .....5.00
Niles,Calif. P1 .....4.85
SanFrancisco S7 .....4.70

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. U5 .....5.20
Gary,Ind. U5 .....5.20
Houston S5 .....5.60
KansasCity S5 .....5.80
Youngstown U5 .....5.20

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 ....5.40
BeaverFalls,Pa. M12 ...5.40
BeaverFalls,Pa.(31) R2..5.46
Camden,N.J. P13 .....5.85
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7, C20 ....5.40
Detroit R7 ..... 5.40
Detroit B5, P17 .....5.60
Donora,Pa A7 .....5.40
Elyria,O. W8 .....5.40
FranklinPark,Ill. N5 ...5.40
Gary,Ind. (31) R2 .....5.47
GreenBay,Wis. F7 .....5.40
Hammond,Ind. L2, M13.5.40
Hartford,Conn.(31) R2 ..5.90
Harvey,Ill. B5 .....5.40
LosAngeles(31) R2 ....6.85
LosAngeles S30 .....6.85
Mansfield,Mass B5 ....5.95
Massillon,O. R8 .....5.40
Massillon,O.(31) R2 ....5.44
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.85
NewCastle,Pa.(17) B4 ..5.40
Pittsburgh J5 .....5.40
Plymouth,Mich. P5 ....5.65
Putnam,Conn. W18 .....5.95
Readville,Mass. C14 ....5.95
St.Louis,Mo. M5 .....5.70
So.Chicago,Ill. W14 ....5.40
SpringCity,Pa. K3 .....5.85
Struthers,O. Y1 .....5.40
Waukegan,Ill. A7 .....5.40
Worcester,Mass. W19 ...5.85
Youngstown F3, Y1 ...5.40

BARS, Cold-Finished Alloy
(Turned and Ground)

Cumberland,Md.(5) C19.4.65

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ...6.625
BeaverFalls,Pa. M12 ..6.625
BeaverFalls,Pa. R2 ...6.685
Bethlehem,Pa. B2 .....6.625
Buffalo B5 .....6.625
Camden,N.J. P13 .....6.80
Canton,O. T7 .....6.625
Carnegie,Pa. C12 .....6.625
Chicago W18 .....6.625
Cleveland A7, C20 ....6.625
Detroit R7 ..... 6.625
Detroit B5, P17 .....6.825
Donora,Pa. A7 .....6.625
Elyria,O. W8 .....6.625
Gary,Ind.(31) R2 .....6.695
Hammond,Ind. L2, M13 6.625
Hartford,Conn.(31) R2.6.925
Harvey,Ill. B5 .....6.625
Lackawanna,N.Y. B2..6.625
LosAngeles S30 .....8.30
Mansfield,Mass. B5 ...6.925
Massillon,O. R8 .....6.625
Massillon,O.(31) R2 ...6.665
Midland,Pa. C18 .....6.625
Monaca,Pa. S17 .....6.625
Newark,N.J. W18 .....6.80
Plymouth,Mich. P5 ....6.825
So.Chicago W14 .....6.625
SpringCity,Pa. K3 .....6.80
Struthers,O. Y1 .....6.625
Warren,O. C17 .....6.625
Waukegan,Ill. A7 .....6.625
Worcester,Mass. A7 ...6.925
Youngstown F3, Y1 ...6.625

BARS, Reinforcing (fabricators)

Atlanta A11 .....4.50
Birmingham C15 .....4.30
Buffalo(31) R2 .....4.33
Cleveland(31) R2 .....4.36
Emeryville,Calif. J7 ....5.05
Fairfield,Ala. T2 .....4.30
Fairless,Pa. U5 .....4.45
Fontana,Calif. K1 .....5.00
Ft.Worth,Tex.(42) T4 ...4.90
Gadsden,Ala.(31) R2...4.33
Gary,Ind. U5 .....4.30
Houston S5 .....4.70

Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....5.00
Milton,Pa. M18 .....4.30
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.85
Pittsburg,Calif. C11 ....5.00
Pittsburgh J5 .....4.30
SandSprings,Okla. S5 ..5.15
Seattle B3, N14, P23...5.05
So.Chicago(31) R2 ....4.37
So.Duquesne,Pa. U5 ...4.30
So.SanFrancisco B3 ....5.05
SparrowsPoint,Md. B2 ..4.30
Sterling,Ill.(1) N15 ....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Youngstown U5 .....4.30
Youngstown(31) R2 ....4.35

BARS, Reinforcing (Fabricated; to consumers)

Johnstown, ¼-1" B2 ..5.70
KansasCity S5 .....6.50
LosAngeles B3 .....5.95
Marion, O. P11 .....5.55
Seattle B3, N14, P23 ...6.15
So.SanFrancisco B3 ....6.00
SparrowsPt. ¼-1" B2..5.70
Williamsport,Pa. S19 ..5.60

RAIL STEEL BARS

Avis,Pa.(3) J8 .....4.25
ChicagoHts.(3) C2, I-2.4.20
ChicagoHts.(4) C2, I-2.4.30
Ft.Worth,Tex.(26) T4 ..4.75
Franklin,Pa. (3) F5 ....4.05
Franklin,Pa. (4) F5 ....4.15
Marion,O.(3) P11 .....4.15
Moline,Ill.(3) R2 .....4.30
Tonawanda(3,4) B12 ...4.30
Williamsport,Pa.(3) S19.4.30

BARS, Wrought Iron

Economy,Pa.(S.R.) B14 10.85
Economy,Pa.(D.R.) B14 13.50
Economy(Staybolt) B14 13.80
McK.Rks.(S.R.) L5 ..10.85
McK.Rks.(D.R.) L5 ..14.75
McK.Rks.(Staybolt) L5 16.25

SHEETS

SHEETS, Hot-Rolled Steel (18 gage and heavier)

Allenport,Pa. P7 .....4.05
Ashland,Ky.(8) A10 ....4.05
Cleveland J5, R2 .....4.05
Conshohocken,Pa. A3 ..4.10
Detroit(8) M1 .....4.20
Ecorse,Mich. G5 .....4.20
Fairfield,Ala. T2 .....4.05
Fairless,Pa. U5 .....4.10
Fontana,Calif. K1 ....4.825
Gadsden,Ala. R2 .....4.05
Gary,Ind. U5 .....4.05
Geneva,Utah C11 .....4.15
GraniteCity,Ill. G4 ....4.25
Houston S5 .....4.45
Ind.Harbor,Ind. I-2, Y1.4.05
Irvin,Pa. U5 .....4.05
Kokomo,Ind. C16 .....4.15
Lackawanna,N.Y. B2 ..4.05
Mansfield,O. E6 (37) ...4.05
Mansfield,O. E6 (38) ...4.80
Munhall,Pa. U5 .....4.05
Newport,Ky. N9 .....4.05
Niles,O. N12 .....4.05
Pittsburg,Calif. C11 ....4.75
Pittsburgh J5 .....4.05
Portsmouth,O. P12 .....4.05
Riverdale,Ill. A1 .....4.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 .....4.05
SparrowsPoint,Md. B2 ..4.05
Steubenville,O. W10 ....4.05
Warren,O. R2 .....4.05
Weirton,W.Va. W6 .....4.05
Youngstown U5, Y1 ....4.05

SHEETS, H.R. (19 ga. lighter)

Gadsden,Ala. R2 .....5.35
Kokomo,Ind. C16 .....5.20
Niles,O. N12 .....4.95

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy

Cleveland J5, R2 .....6.10
Conshohocken,Pa. A3 ..6.15
Ecorse,Mich. G5 .....6.25
Fairfield,Ala. T2 .....6.10
Fairless,Pa. U5 .....6.15
Fontana,Calif. K1 ....6.875
Gary,Ind. U5 .....6.10
Ind.Harbor,Ind. I-2, Y1.6.10
Irvin,Pa. U5 .....6.10
Lackawanna(35) B2 ....6.10
Munhall,Pa. U5 .....6.10
Pittsburgh J5 .....6.10
Sharon,Pa. S3 .....6.10
So.Chicago,Ill. U5 .....6.10
SparrowsPoint(36) B2 ..6.10
Warren,O. R2 .....6.10
Weirton,W.Va. W6 .....6.10
Youngstown U5, Y1 ....6.10

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ....4.30
Cleveland R2 .....4.65
Ind.Harbor,Ind. I-2 ....4.30
Warren,O. R2 .....4.65

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7 .....4.95
Cleveland J5, R2 .....4.95
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....4.95
Fairless,Pa. U5 .....5.00
Follansbee,W.Va. F4 ...4.95
Fontana,Calif. K1 .....6.05
Gary,Ind. U5 .....4.95
GraniteCity,Ill. G4 ....5.15
Ind.Harbor,Ind. I-2, Y1.4.95
Irvin,Pa. U5 .....4.95
Lackawanna,N.Y. B2 ..4.95
Middletown,O. A10 .....4.95
Pittsburg,Calif. C11 ....5.90
Pittsburgh J5 .....4.95
Portsmouth,O. P12 .....4.95
SparrowsPoint,Md. B2 ..4.95
Steubenville,O. W10 ....4.95
Warren,O. R2 .....4.95
Weirton,W.Va. W6 .....4.95
Youngstown Y1 .....4.95

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 .....7.50
Ecorse,Mich. G5 .....7.65
Fairless,Pa. U5 .....7.55
Fontana,Calif. K1 .....8.55
Gary,Ind. U5 .....7.50
IndianaHarbor,Ind. Y1..7.50
Irvin,Pa. U5 .....7.50
Lackawanna(37) B2 ...7.50
Pittsburgh J5 .....7.50
SparrowsPoint(38) B2 ..7.50
Warren,O. R2 .....7.50
Weirton,W.Va. W6 ....7.50
Youngstown Y1 .....7.50

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....5.65
Middletown,O. A10 .....5.45
Warren,O. R2 .....5.65

SHEETS, Culvert (16 Ga.)	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.50	....
Canton,O. R2	6.25	7.10
Fairfield T2	6.25	6.50
Gary,Ind. U5	6.25	6.50
Ind.Harbor I-2	6.25	6.50
Irvin,Pa. U5	6.25	6.50
Kokomo,Ind. C16	6.35	....
MartinsFry.,O.W10	6.25	6.60
Newport,Ky. N9	6.25	6.60
Pitts.,Calif. C11	7.00	....
SparrowsPt. B2	6.25	....

SHEETS, Culvert Pure Iron

Ashland,Ky. A10 .....6.75
Fairfield,Ala. T2 .....6.50
MartinsFerry,O. W10 ...6.50

SHEETS, Galvanized Steel Hot-dipped

Ashland,Ky. A10 .....5.45*
Butler,Pa. A10 .....5.45†
Canton,O. R2 .....5.45‡
Dover,O. R1 .....5.45‡
Fairfield,Ala. T2 .....5.45*
Gadsden,Ala. R2 .....5.45‡
Gary,Ind. U5 .....5.45*
GraniteCity,Ill. G4 ....5.65‡
Ind.Harbor,Ind. I-2 ...5.45†
Irvin,Pa. U5 .....5.45†
Kokomo,Ind. C16 .....5.55‡
MartinsFerry,O. W10 ..5.45*
Middletown,O. A10 ....5.45†
Newport,Ky. N9 .....5.45†
Niles,O. N12 .....5.45‡
Pittsburg,Calif. C11 ..6.20‡
SparrowsPt.,Md. B2 ..5.45‡
Steubenville,O. W10 ...5.45‡
Weirton,W.Va. W6 ....5.45*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Galvanized High-Strength Low-Alloy

Irvin,Pa. U5 .....8.20
SparrowsPoint(39) B2 ..8.20

SHEETS, Galvannealed Steel

Canton,O. R2 .....5.85
Irvin,Pa. U5 .....5.85
Kokomo,Ind. C16 .....5.95†
Newport,Ky. N9 .....6.00
Niles,O. N12 .....6.00

SHEETS, Galvanized Ingot Iron

Ashland,Ky.(8) A10 ....5.70
Canton,O. R2 .....6.20

SHEETS, Galvanized Ingot Iron (Hot-dipped continuous)

Ashland,Ky. A10 .....5.70
Butler,Pa. A10 .....5.70
Middletown,O. A10 ....5.70

SHEETS, Electrogalvanized

Cleveland(28) R2 .....6.30
Niles,O.(28) R2 .....6.30
Weirton,W.Va. W6 ....5.975

SHEETS, Aluminum Coated

Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 ...5.375
Cleveland R2 .....5.375
Gary,Ind. U5 .....5.375
GraniteCity,Ill. G4 ....5.575
Ind.Harbor,Ind. I-2 ...5.375
Irvin,Pa. U5 .....5.375
Middletown,O. A10 ....5.375
Niles,O. N12 .....5.375
Youngstown Y1 .....5.375

BLUED STOCK, 29 ga.

Follansbee,W.Va. F4 ..7.375
Follansbee(23), F4 ....6.60
Yorkville,O. W10 .....7.375

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10 5.85
Gary,Ind. U5 .....5.85
Mansfield,O. E6 .....5.85
Middletown,O. A10 ....5.85
Niles,O. N12 .....5.85
Weirton,W.Va. W6 ....5.85

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....6.25

SHEETS, Well Casing

Fontana,Calif. K1 ....6.325

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div. Buffalo-Eclipse Corp.
B12 Buffalo Steel Div., H. K. Porter Co. Inc.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Div.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.
M16 Md. Fine&Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng. HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallugical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P23 Pacific Steel Rolling

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 ReilanceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div. Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless WeldedProducts
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Allenport,Pa. P7 ....4.05
Alton,Ill. L1 ....4.225
Ashland,Ky.(8) A10 ....4.05
Atlanta A11 ....4.25
Bessemer,Ala. T2 ....4.05
Birmingham C15 ....4.05
Bridgeport,Conn.(10)S15 4.05
Buffalo(27) R2 ....4.05
Conshohocken,Pa. A3 ..4.175
Detroit M1 ....4.20
Ecorse,Mich. G5 ....4.20
Fairfield,Ala. T2 ....4.05
Fontana,Calif. K1 ....4.825
Gadsden,Ala.(27) R2 ....4.05
Gary,Ind. U5 ....4.05
Houston,Tex. S5 ....4.45
Ind.Harbor,Ind. I-2, Y1 4.05
Johnstown,Pa.(25) B2 ..4.05
KansasCity,Mo.(9) S5 ..4.65
Lackawanna,N.Y.(25) B2..4.05
LosAngeles(25) B3 ....4.80
Milton,Pa. M18 ....4.05
Minnequa,Colo. C10 ....5.15
NewBritain(10) S15 ....4.05
N.Tonawanda,N.Y. B11 4.05
Pittsburg,Calif. C11 ....4.80
Portsmouth,O. P12 ....4.05
Riverdale,Ill. A1 ....4.05
SanFrancisco S7 ....5.00
Seattle(25) B3, P23 ....5.05
Seattle N14 ....5.05
Sharon,Pa. S3 ....4.05
So.Chicago,Ill. W14 ....4.05
So.SanFrancisco(25) B3 4.80
SparrowsPoint,Md. B2 ..4.05
Sterling(1) N15 ....4.05
Sterling,Ill. N15 ....4.15
Torrance,Calif. C11 ....4.80
Warren,O. R2 ....4.05
Weirton,W.Va. W6 ....4.05
Youngstown U5 ....4.05

STRIP, Hot-Rolled Alloy

Bridgeport,Conn.(10)S15 6.45
Carnegie,Pa. S18 ....6.70
Fontana,Calif. K1 ....8.10
Gary,Ind. U5 ....6.70
Houston,Tex. S5 ....7.10
KansasCity,Mo. S5 ....7.30
LosAngeles B3 ....7.90
NewBritn.,Conn.(10)S15 6.45
Newport,Ky. N9 ....6.70
Seattle P23 ....7.80
Sharon,Pa. S3 ....6.70
So.Chicago W14 ....6.70
Youngstown U5 ....6.70

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 ....6.15
Conshohocken,Pa. A3 ..6.15
Ecorse,Mich. G5 ....6.30
Fairfield,Ala. T2 ....6.15
Fontana,Calif. K1 ....7.25
Gary,Ind. U5 ....6.15
Houston S5 ....6.55
Ind.Harbor,Ind. I-2, Y1 6.15
KansasCity,Mo. S5 ....6.75
Lackawanna,N.Y. B2 ..6.15
LosAngeles(25) B3 ....6.90
Seattle(25) B3, P23 ....7.15
Sharon,Pa. S3 ....6.15
So.SanFrancisco(25) B3 6.90
SparrowsPoint,Md. B2 ..6.15
Warren,O. R2 ....6.15
Weirton,W.Va. W6 ....6.15
Youngstown U5, Y1 ....6.15

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ....4.30
Warren,O. R2 ....4.65

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 ....5.75
Baltimore T6 ....5.75
Bridgeport,Conn.(10)S15 5.75
Cleveland A7, J5 ....5.75
Dearborn,Mich. D3 ....5.90
Detroit D2, M1 ....5.90
Detroit P20 ....5.95
Dover,O. G6 ....5.75
Ecorse,Mich. G5 ....5.90
Follansbee,W.Va. F4 ....5.75
Fontana,Calif. K1 ....7.65
FranklinPark,Ill T6 ....5.85
Ind.Harbor,Ind. I-2 ....6.00
Indianapolis C8 ....5.90
Lackawanna,N.Y. B2 ....5.75
LosAngeles C1 ....7.80
Mattapan,Mass. T6 ....6.30
Middletown,O. A10 ....5.75
NewBedford,Mass. R10 ..6.20
NewBritain(10) S15 ....5.75
NewCastle,Pa. B4, E5 ..5.75
NewHaven,Conn. A7 ....6.50
NewHaven,Conn. D2 ....6.20
Pawtucket,R.I. R3 ....6.40
Pawtucket,R.I. N8 ....6.30
Pittsburgh J5 ....5.75
Portsmouth,O. P12 ....5.75
Riverdale,Ill. A1 ....5.85
Rome,N.Y.(32) R6 ....5.75
Sharon,Pa. S3 ....5.75
SparrowsPt. Md. B2 ....5.75
Trenton,N.J. R5 ....7.00
Wall'ford,Conn. W2 ....6.20
Warren,O. B9, R2, T5..5.75
Weirton,W.Va. W6 ....5.75
Worcester,Mass. A7 ....6.60
Youngstown C8, Y1 ....5.75

STRIP, Cold-Rolled Alloy

Carnegie,Pa. S18 ....12.45
Cleveland A7 ....12.45
Dover,O. G6 ....12.45
Fontana,Calif. K1 ....14.55
FranklinPark,Ill. T6 ....12.45
Harrison,N.J. C18 ....12.45
Mattapan,Mass. T6 ....12.80
Pawtucket,R.I. N8 ....12.80
Sharon,Pa. S3 ....12.45
Worcester,Mass. A7 ....12.75
Youngstown C8 ....12.90

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	....	8.35	9.30	11.45	14.15
Bridgeport,Conn.(10) S15	5.75	8.05	9.30	11.15	13.85
Bristol,Conn. W1	....	....	9.30	11.45	....
Carnegie,Pa. S18	....	8.05	9.00	11.15	13.85
Cleveland A7	5.75	8.05	9.00	11.15	13.85
Cleveland C7	....	8.05	9.00	11.15	13.85
Dearborn,Mich. D3	5.90	8.25	9.20	....	....
Detroit D2	5.90	8.25	9.20	10.95	....
Dover,O. G6	5.85	8.05	9.00	11.15	13.85
FranklinPark,Ill. T6	5.85	8.05	9.00	11.15	13.85
Harrison,N.J. C18	....	....	9.30	11.45	14.15
Indianapolis C8	6.00	8.20	9.00	11.15	13.85
Mattapan,Mass. T6	6.30	8.35	9.30	11.45	14.15
NewBritn.,Conn.(10) S15	5.75	8.05	9.00	11.15	13.85
NewCastle,Pa. B4	5.75	8.05	9.00	11.15	....
NewCastle,Pa. E5	5.75	8.05	9.00	11.15	13.85
NewHaven,Conn. D2	6.20	8.35	9.30	11.25	....
NewYork W3	....	8.35	9.30	11.45	14.15
Pawtucket,R.I. N8	6.30	8.35	9.30	11.45	14.15
Riverdale,Ill.(1) A1	5.85	8.05	9.00	11.15	13.85
Rome,N.Y.(32) R6	5.75	8.05	9.00	10.95	13.25
Sharon,Pa. S3	5.75	8.05	9.00	11.15	13.85
Trenton,N.J. R5	....	8.35	9.30	11.45	14.15
Wallingford,Conn. W2	6.20	8.35	9.30	11.45	14.15
Warren,O. T5	5.75	8.05	9.00	10.95	13.25
Weirton,W.Va. W6	5.75	8.05	9.00	11.15	13.85
Worcester,Mass. A7	6.60	8.35	9.30	11.45	14.15
Worcester,Mass. T6	6.30	8.35	9.30	11.45	14.15
Youngstown C8	5.85	8.05	9.00	11.15	13.85

Spring Steel (Tempered)					
Bristol,Conn. W1	....	....	12.90	15.60	....
Buffalo W12	....	....	12.90	....	....
Harrison,N.J. C18	....	....	12.90	15.60	19.00
NewYork W3	....	....	12.90	15.60	19.00
Trenton,N.J. R5	....	....	12.90	15.60	19.00
Worcester,Mass. T6	....	....	12.90	15.60	19.00
Worcester,Mass. W12	....	....	12.90	....	....
Youngstown C8	....	....	13.25	15.95	19.35

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7, J5 ....8.60
Dearborn,Mich. D3 ....8.75
Dover,O. G6 ....8.60
Ecorse,Mich. G5 ....8.75
Lackawanna,N.Y. B2 ..8.425
Pittsburgh J5 ....8.60
Sharon,Pa. S3 ....8.60
SparrowsPoint,Md. B2..8.425
Warren,O. R2 ....8.60
Weirton,W.Va. W6 ....8.60
Youngstown Y1 ....8.60

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 ....6.35

STRIP, Electrogalvanized

Dover,O. G6 ....5.75
Youngstown C8 ....5.75

TIGHT COOPERAGE HOOP

Atlanta A11 ....4.775
Riverdale,Ill. A1 ....4.625
Sharon,Pa. S3 ....4.475
Youngstown U5 ....4.475

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom,W.Va. W10	....	....	9.10	10.10	11.00
Brackenridge,Pa. A4	....	....	9.10	10.10	11.00
IndianaHarbor,Ind. I-2	8.025	8.50	9.10	10.10	....
Mansfield,O. E6	8.025	8.50	9.10	10.10	11.00
Newport,Ky. N9	8.025	8.50	9.10	10.10	11.00
Niles,O. N12	8.025	8.50	9.10	10.10	....
Vandergrift,Pa. U5	....	8.50	9.10	10.10	11.00
Warren,O. R2	8.025	8.50	9.10	10.10	11.00
Zanesville,O. A10	....	8.50	9.10	10.10	11.00

C.R. COILS & CUT LENGTHS, (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
Brackenridge,Pa. A4	....	....	9.85	10.85	11.75
GraniteCity,Ill. G4	8.425*	8.95*	9.55*	10.55*	....
IndianaHarbor,Ind. I-2	8.225	8.75*	9.35*	....	....
Vandergrift,Pa. U5	....	9.25†	9.85†	10.85†	11.75†
Vandergrift,Pa. U5	8.225*	8.75*	9.35*	10.35*	11.25*
Warren,O. R2	8.225	9.25	9.85	10.85	11.75
Zanesville,O. A10	....	9.25	9.85	10.85	11.75

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	11.95	12.50	13.00	14.00
Brackenridge, Pa. A4	11.95	....	....	....
Newport,Ky. N9	11.95	....	....	....
Vandergrift,Pa. U5	11.95	12.50	13.00	14.00
Zanesville,O. A10	11.95§	12.50§	13.00§	14.00§

C.R. COILS & CUT LENGTHS	T-100	T-90	T-80	T-73	T-72
Butler,Pa. A10	....	....	16.60	17.10	....
Vandergrift,Pa. U5	14.00	15.00	16.60	17.10	12.70
Warren,O. R2	....	....	....	....	12.70‡

* Semiprocessed. † Fully processed only. ‡ Coils annealed; semiprocessed ½c lower. § Coils, ¾-cent higher.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	7.65	8.05
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	8.95
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 ....$6.50
Fairfield,Ala. T2 ....6.60
Fairless,Pa. U5 ....6.60
Gary,Ind. U5 ....6.50
GraniteCity,Ill. G4 ....6.70
Ind.Harbor,Ind. I-2, Y1..6.50
Irvin,Pa. U5 ....6.50
Niles,O. R2 ....6.50
Pittsburg,Calif. C11 ....7.25
Warren,O. R2 ....6.50
SparrowsPoint,Md. B2 ..6.60
Weirton,W.Va. W6 ....6.50
Yorkville,O. W10 ....6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4 ....6.10
Gary,Ind. U5 ....6.10
GraniteCity,Ill. G4 ....6.30
Ind.Harbor,Ind. Y1 ....6.10
Irvin,Pa. U5 ....6.10
Yorkville,O. W10 ....6.10

MANUFACTURING TERNES (Special Coated)

Gary,Ind. U5 ....7.75
Irvin,Pa. U5 ....7.75
Yorkville,O. W10 ....7.75

MANUFACTURING TERNES (Light coated, 6 lb)

Yorkville,O. W10 ....8.65

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5 ....9.75

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..5.75
Aliquippa,Pa. J5 ....5.75
Alton,Ill. L1 ....5.925
Atlanta A11 ....5.95
Bartonville,Ill. K4 ....5.85
Buffalo W12 ....5.75
Chicago W13 ....5.75
Cleveland A7, C20 ....5.75
Crawfordsville,Ind. M8..5.85
Donora,Pa. A7 ....5.75
Duluth,Minn. A7 ....5.75
Fairfield,Ala. T2 ....5.75
Fostoria,O.(24) S1 ....5.95
Houston S5 ....6.15
Jacksonville,Fla. M8 ....6.27
Joliet,Ill. A7 ....5.75
KansasCity, Mo. S5 ....6.35
Kokomo,Ind. C16 ....5.85
LosAngeles B3 ....6.70
Minnequa,Colo. C10 ....6.00
Monessen,Pa. P7 ....5.75
Newark 6-8 ga. I-1 ....6.40
No.Tonawanda B11 ....5.75
Palmer,Mass. W12 ....6.05
Pittsburg,Calif. C11 ....6.70
Portsmouth,O. P12 ....5.75
Rankin,Pa. A7 ....5.75
So.Chicago,Ill. R2 ....5.75
So.SanFrancisco C10 ....6.70
SparrowsPoint,Md. B2..5.85
Sterling,Ill.(1) N15 ....5.75
Sterling,Ill. N15 ....5.85
Struthers,O. Y1 ....5.75
Waukegan,Ill. A7 ....5.75
Worcester,Mass. A7 ....6.05

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 ....7.20
Alton,Ill. L1 ....7.375
Bartonville,Ill. K4 ....7.30
Buffalo W12 ....7.20
Cleveland A7 ....7.20
Donora,Pa. A7 ....7.20
Duluth,Minn. A7 ....7.20
Fostoria,O. S1 ....7.20
Johnstown,Pa. B2 ....7.20
LosAngeles B3 ....8.15
Millbury,Mass.(12) N6..7.50
Minnequa,Colo. C10 ....7.45
Monessen,Pa. P7, P16..7.20
Muncie,Ind. I-7 ....7.40
Palmer,Mass. W12 ....7.50
Pittsburg,Calif. C11 ....8.15
Portsmouth,O. P12 ....7.20
Roebling,N.J. R5 ....7.50
So. Chicago,Ill. R2 ....7.20
So.SanFran. C10 ....8.15
SparrowsPt., Md. B2 ....7.30
Struthers,O. Y1 ....7.20
Trenton,N.J. A7 ....7.50
Waukegan,Ill. A7 ....7.20
Worcester A7,J4,T6,W12 7.50

WIRE, Upholstery Spring

Aliquippa,Pa. J5 ....6.90
Alton,Ill. L1 ....7.075
Buffalo W12 ....6.90
Cleveland A7 ....6.90
Donora,Pa. A7 ....6.90
Duluth,Minn. A7 ....6.90
Johnstown,Pa. B2 ....6.90
KansasCity,Mo. S5 ....7.50
LosAngeles B3 ....7.85
Minnequa,Colo. C10 ..7.075
Monessen,Pa. P7, P16 ..6.90
NewHaven,Conn. A7 ....7.20
Palmer,Mass. W12 ....7.20
Pittsburg,Calif. C11 ....7.85
Portsmouth,O. P12 ....6.90
Roebling,N.J. R5 ....7.20
So.Chicago,Ill. R2 ....6.90
So.SanFrancisco C10 ....7.85
SparrowsPoint,Md. B2 ..7.00
Trenton,N.J. A7 ....7.20
Waukegan,Ill. A7 ....6.90
Worcester,Mass. A7 ....7.20

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 ....11.375
Bartonville,Ill. K4 ....11.30
Buffalo W12 ....11.20
Chicago W13 ....10.55
Cleveland A7 ....11.20
Crawfordsville,Ind. M8..11.30
Fostoria,O. S1 ....11.20
Jacksonville,Fla. M8 ..11.73
Johnstown,Pa. B2 ....11.20
Kokomo,Ind. C16 ....11.20
Minnequa,Colo. C10 ..10.95
Monessen,Pa. P16 ....11.20
Muncie,Ind. I-7 ....11.40
Palmer,Mass. W12 ....11.50
Roebling,N.J. R5 ....11.50
So.SanFrancisco C10 ..11.55
Waukegan,Ill. A7 ....11.20
Worcester,Mass. A7,T6 11.50

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4 ....9.90
Buffalo W12 ....9.90
Johnstown,Pa. B2 ....9.90
Minnequa,Colo. C10 ..10.025
Monessen,Pa. P16 ....9.90
Muncie,Ind. I-7 ....10.10
Portsmouth,O. D2 ....9.90
Roebling,N.J. R5 ....10.20
SparrowsPt.,Md. B2 ..10.00

ROPE WIRE (A)

Alton,Ill. L1 ....9.45
Bartonville,Ill. K4 ....9.35
Buffalo W12 ....9.75
Fostoria,O. S1 ....9.75
Johnstown,Pa. B2 ....9.75
Monessen,Pa. P7 ....9.35
Monessen,Pa. P16 ....9.75
Muncie,Ind. I-7 ....9.95
Palmer,Mass. W12 ....10.05
Portsmouth,O. P12 ....9.35
Roebling,N.J. R5 ....10.05
SparrowsPt. B2 ....9.85
Struthers,O. Y1 ....9.75
Worcester J4, T6 ....6.65

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE

(Continued)

WIRE, Tire Bead

Alton,Ill. L1	12.75
Bartonville,Ill. K4	13.25
Monessen, Pa. P16	13.15
Portsmouth,O. P12	13.15
Roebling,N.J. R5	13.45

Wire, Cold-Rolled Flat

Anderson,Ind. G6	7.95
Baltimore T6	8.25
Buffalo W12	7.95
Cleveland A7	7.95
Crawfordsville,Ind M8	8.05
Dover,O. G6	7.95
Fostoria,O. S1	7.95
Kokomo,Ind. C16	8.05
FranklinPark,Ill. T6	8.05
Massillon,O. R8	7.95
Milwaukee C23	8.15
Monessen,Pa. P7, P16	7.95
Pawtkt.,R.I. N8	8.25
Rome,N.Y.(32) R6	7.95
Trenton,N.J. R5	8.25
Worcester A7, T6, W12	8.25

Wire, Merchant Quality

(6 to 8 gage)	An'ld. Galv.
Ala.City,Ala. R2	6.90 7.30**
Aliquippa J5	6.90 7.425§
Atlanta A11	7.00 7.55
Bartonville(48) K4	7.00 7.55
Buffalo W12	6.90 7.30†
Cleveland A7	6.90 ....
Crawfordsville M8	7.00 7.55
Donora,Pa. A7	6.90 7.30†
Duluth,Minn. A7	6.90 7.30†
Fairfield T2	6.90 730†
Houston,Tex. S5	7.30 7.70†
Jacks'ville,Fla. M8	7.425 7.95
JohnstownB2(48)	6.90 7.45*
Joliet,Ill. A7	6.90 7.30†
KansasCity,Mo. S5	7.50 7.90†
Kokomo C16	7.00 7.40†
LosAngeles B3	7.85 ....
Minnequa C10	7.15 7.55**
Monessen P7 (48)	6.90 7.45
Palmer W12	7.20 7.60†
Pitts.,Calif. C11	7.85 8.25†
Portsmouth,O. P12	6.90 ....
Rankin A7	6.90 7.30†
So.Chi'go R2	6.90 7.30**
S.S.Frn. C10	7.85 8.25**
Spar'wsPt.B2(48)	7.00 7.55*
Str'g(1)(48)N15	6.90 7.45
Struthers,O.(48)Y1	6.90 7.40†
Worcester A7	7.20 ....

* Based on 11c zinc; † 5c zinc; ‡ Less than 10c zinc; ** Subject to zinc equalization extras.

WOVEN FENCE, 9-15½Ga. Col.

Ala.City,Ala. R2	146**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliq'ppa,Pa.9-14½ga.J5	149§
Atlanta A11	151
Bartonville,Ill. K4	151
Crawfordsville,Ind. M8	151
Donora,Pa. A7	146†
Duluth,Minn. A7	146†
Fairfield,Ala. T2	146†
Houston,Tex. S5	154†
Johnstown,Pa. (43) B2	149
Joliet,Ill. A7	146†
KansasCity,Mo. S5	158†
Kokomo,Ind. C16	148†
Minnequa,Colo C10	154**
Monessen,Pa. 9 ga. P17	151
Pittsburg,Calif. C11	169†
Rankin,Pa. A7	146†
So.Chicago,Ill. R2	146**
Sterling,Ill.(1) N15	149

† Based on 5c zinc; *11c zinc; § 10c zinc; ** Subject to zinc equalization extras.

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2	155
Atlanta A11	157
Bartonville,Ill. K4	157
Crawfordsville,Ind. M8	157
Donora,Pa. A7	155
Duluth,Minn. A7	155
Fairfield,Ala. T2	155
Joliet,Ill. A7	155
Houston S5	163
KansasCity,Mo. S5	167
Kokomo,Ind. C16	157
Minnequa,Colo. C10	160
Pittsburg,Calif. C11	179
So.Chicago,Ill. R2	155
So.SanFran.,Calif. C10	179
SparrowsPoint,Md. B2	157
Sterling,Ill.(1) N15	155

WIRE, Barbed Col.

Alabama,City,Ala. R2	159**
Aliquippa J5	156§
Atlanta A11	164
Bartonville,Ill. K4	164
Crawfordsville,Ind. M8	164
Donora,Pa. A7	159†
Duluth,Minn. A7	159†
Fairfield,Ala. T2	159†
Houston,Tex. S5	167†
Johnstown,Pa. B2	162*
Joliet,Ill. A7	159†
KansasCity,Mo. S5	171†
Kokomo,Ind. C16	161†
Minnequa,Colo. C10	165**
Monessen,Pa. P7	163
Pittsburg,Calif. C11	179†
Rankin,Pa. A7	159†
So.Chicago,Ill. R2	159**
S.SanFrancisco C10	179**
SparrowsPoint,Md. B2	164*
Sterling,Ill.(1) N15	162

† Based on 5c zinc; * 11c zinc; § 10c zinc; **Subject to zinc equalization extras.

WIRE (16 gage) Stone	An'ld Galv. Stone
Ala.City R2	13.15 14.70**
Aliquippa J5	12.50 14.30§
Bartonville K4	13.25 15.10
Buffalo W12	13.15 ....
Cleveland A7	13.15 ....
CrawfordsvilleMS	13.25 15.10
Fostoria,O. S1	13.25 14.80†
Johnstown B2	13.15 15.00*
Kokomo C16	12.60 14.15†
Minnequa C10	13.40 15.10**
Palmer,Mas.W12	13.15 14.70*
Pitts.,Calif. C11	13.50 15.05†
So.Chicago R2	13.15 14.70
SparrowsPt. B2	13.25 15.10*
Sterling(1) N15	13.15 15.00
Waukegan A7	13.15 14.70†
Worcester A7	13.45 ....

* Based on 11c zinc; † 5c zinc; ‡ 10c zinc; ** Subject to zinc equalization extras.

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	137
Aliquippa,Pa. J5	137
Atlanta A11	139
Bartonville,Ill. K4	139
Chicago,Ill. W13	137
Cleveland A9	142
Crawfordsville,Ind. M8	139
Donora,Pa. A7	137
Duluth,Minn. A7	137
Fairfield,Ala. T2	137
Galveston,Tex. D7	139
Houston,Tex. S5	145
Johnstown,Pa. B2	137
Joliet,Ill. A7	137
KansasCity,Mo. S5	149
Kokomo,Ind. C16	139
Minnequa,Colo. C10	142
Monessen,Pa. P7	137
Pittsburg,Calif. C11	156
Rankin,Pa. A7	137
So.Chicago,Ill. R2	137
SparrowsPt.,Md. B2	139
Sterling,Ill.(1) N15	137
Worcester,Mass. A7	143

NAILS, CUT (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3	$8.30
Wheeling,W.Va. W10	8.30

STAPLES, Polished Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	138
Aliquippa,Pa. J5	138
Atlanta A11	140
Bartonville,Ill. K4	140
Crawfordsville,Ind. M8	140
Donora,Pa. A7	138
Duluth,Minn. A7	138
Fairfield,Ala. T2	138
Johnstown,Pa. B2	138
Joliet,Ill. A7	138
Kokomo,Ind. C16	140
Minnequa,Colo. C10	143
Monessen,Pa. P7	138
Pittsburg,Calif. C11	157
Rankin,Pa. A7	138
So.Chicago,Ill. R2	138
SparrowsPt.Md. B2	140
Sterling,Ill.(1) N15	138
Worcester,Mass. A7	144

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2, I-2	150
Duluth,Minn. A7	150
Franklin,Pa. F5	150
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa,Colo. C10	155
Moline,Ill. R2	155
So.Chicago,Ill. R2	150
Tonawanda,N.Y. B12	150
Williamsport,Pa. S19	150

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	4
⅝-in. & ⅞-in.	5
¾-in. and larger	3
Longer than 6 in.:	
All diameters	+ 4
Lag bolts, all diams.:	
6 in. and shorter	12
Over 6 in. long	8
Ribbed Necked Carriage	5
Blank	25
Plow	25
Step, Elevator, Tap and Sleigh Shoes	12
Tire Bolts	List
Boiler & Fitting-Up Bolts	23

NUTS

H.P. and C.P., regular & heavy:	
Square, all sizes	58
H.P., Hex, regular & heavy:	
¾" and smaller	58
⅞" to 1⅛", inclusive.	60
1¼" to 1½", inclusive	62
1⅝" and larger	58
C.P. Hex regular & heavy:	
All sizes	58
Hot Galv. Nuts (all types):	
¾" to 1½", inclusive.	40
⅞" to 1½", inclusive.	43
Finished Hex Nuts:	
New standard, all sizes	58
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter	34
1 in. and smaller diam. x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼ in. diam. & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	47.5—10
Plated finishes	30—10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	38
¾-in. through 1 in.	22
Longer than 6 in.:	
⅝-in. and smaller	20
¾-in. through 1 in.	7

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger	9.25
7/8-in. under	List less 37%

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	19.59	19.00
1¼	13	....	23.21	18.77
1½	13	21.40	25.65	20.75
1¾	13	25.28	30.31	24.52
2	13	28.33	33.97	27.48
2¼	13	31.91	38.26	30.95
2½	12	34.63	41.52	33.59
2½	12	38.15	45.74	37.00
2¾	12	41.31	49.53	40.07
3	12	44.05	52.82	42.72

RAILWAY MATERIALS

RAILS	Std. No. 1	Std. No. 2	Std. Tee Rails All No. 2	Std. Tee Rails 60 lb Under
Bessemer,Pa. U5	4.45	4.35	4.40	5.35
Ensley,Ala. T2	4.45	4.35	....	5.35
Fairfield,Ala. T2	....	....	....	5.35
Gary,Ind. U5	4.45	4.35	4.40	....
Huntington,W.Va. W7	....	....	....	5.35
IndianaHarbor,Ind. I-2	4.45	4.35	4.40	....
Johnstown,Pa. B2	....	....	....	(16)5.35
Lackawanna,N.Y. B2	4.45	4.35	....	5.35
Minnequa,Colo. C10	4.45	4.35	....	5.85
Steelton,Pa. B2	4.45	4.35	....	5.35
Williamsport,Pa. S19	....	....	....	5.35

TIE PLATES

Fairfield,Ala. T2	5.275
Gary,Ind. U5	5.275
Ind.Harbor,Ind. I-2	5.275
Lackawanna,N.Y. B2	5.275
Minnequa,Colo. C10	5.275
Seattle B3	5.425
Steelton,Pa. B2	5.275
Torrance,Calif. C11	5.425

TRACK BOLTS (20) Treated

Cleveland R2	11.50
KansasCity,Mo. S5	11.50
Lebanon,Pa. B2	11.50
Minnequa,Colo. C10	11.50
Pittsburgh O3	11.50
Pittsburgh P14	11.50
Seattle,Wash. B3	12.00

AXLES

Ind.Harbor,Ind. S13	6.75
Johnstown,Pa. B2	6.75

JOINT BARS

Bessemer,Pa. U5	5.425
Fairfield,Ala. T2	5.425
Ind.Harbor,Ind. I-2, Y1	5.425
Joliet,Ill. U5	5.425
Lackawanna,N.Y. B2	5.425
Minnequa,Colo. C10	5.425
Steelton,Pa. B2	5.425

SCREW SPIKES

Cleveland R2	11.00

STANDARD TRACK SPIKES

Fairfield,Ala. T2	7.30
Ind.Harbor,Ind. I-2, Y1	7.30
KansasCity,Mo. S5	7.30
Lebanon,Pa. B2	7.30
Minnequa,Colo. C10	7.30
Pittsburgh J5	7.30
Seattle B3	7.80
So.Chicago,Ill. R2	7.30
Struthers,O. Y1	7.30
Youngstown R2	7.30

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

Sponge iron:	Cents
98+ % Fe, annealed	18.00
Unannealed	
Minus 100 mesh	14.50
Minus 35 mesh	10.25
Minus 20 mesh	10.00
Swedish, c.i.f. N.Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N. J., in bags	11.25
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ⅛ in. x 1.3 in.	22.00
Annealed, 99.5% Fe	36.50
Unannealed (99+ % Fe)	32.50
Unannealed (99+ % Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Atomized, 500 lb drums, frgt. allowed:	
Carlots	*50.00*
Ton lots	*52.00*
Antimony, 500 lb lots	32.00*
Brass, ¼-ton lots	*29.75-37.75†*
Bronze, ¼-ton lots	31.00-39.00†
Copper:	
Electrolytic	*14.25**
Reduced	*14.25**
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	89.50
Nickel-Silver, ¼-ton lots	*44.25§*
Nickel-Silver, ¼-ton lots	*47.00***
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	*7.00**
Stainless Steel, 302	91.00
Tin	14.50*
Zinc, ¼-ton lots	*17.25-21.00†*
Tungsten	Dollars
Melting grade, 99% 60-to 200 mesh:	
1000 lb and over	4.95
Less than 1000 lb	5.10
Chromium electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 29% Zn, 1% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago base.
(2) Angles, flat, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛" to 1 7/16"; 1 7/16" to 1 15/16" 4.75c; 1 15/16" to 7 5/16" 5.15c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅝" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 4.95c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon and 0.35c H.S.-L.A.
(31) Base; deld. within mill county.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 gage & heavier; 60" & narrower.
(38) 14 gage & lighter.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.10c.
(43) 9.14½ gage.
(48) 6 7 gage.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	13.5	list	17.5	0.25	20	2.75	21.5	4.25	21.5	4.25	20.75	3.5	23.25	6
Ambridge, Pa. N2 (†)	13.5	...	17.5	...	20	...	21.5	...	21.5	...	20.75	...	23.25	...
Lorain, O. N3 (*)	13.5	2.25	17.5	3.25	20	5.75	21.5	7.25	21.5	7.25	20.75	6.5	23.25	9
Youngstown Y1 (††)	13.5	+1.5	17.5	0.75	20	3.25	21.5	4.75	21.5	4.75	20.75	4	23.25	6.5

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2 (**)	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	...	...	...	...	...	...	23.75	7.5	26.75	11.5	29.25	15	31.75	16
Alton, Ill. L1 ($)	...	...	...	...	...	...	21.75	6.5	24.75	10.5	27.25	14	29.75	14.75
Benwood, W. Va. W10(††)	24	+2.5	15.25	+8.25	7.25	+14.25	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75
Butler, Pa. F6‡‡	25	+1.5	17	+6.5	9.5	+12	...	..	...	...	...	..	...	....
Etna, Pa. N2 (†)	...	...	...	...	...	...	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75
Fairless, Pa. N3	...	...	...	...	...	...	19.25	..	22.25	...	24.75	..	27.25	....
Fontana, Calif. K1 (**)	...	...	...	...	...	...	10.75	+6.5	13.75	+2.5	16.25	1	18.75	2.25
Ind. Harbor Y1 (††)	...	...	...	...	...	...	22.75	7.5	25.75	11.5	28.25	15	30.75	15.75
Lorain, O. N3 (*)	...	...	...	...	...	...	23.75	13.5	26.75	17.5	29.25	21	31.75	20.5
Sharon, Pa. S4 (‡)	25	+1.5	17	+6.5	9.5	+12	...	..	...	...	...	..	...	....
Sharon, Pa. M6	...	...	...	...	...	...	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Sparrows Pt., Md. B2 ($)	23	+3.5	15	+8.5	7.5	+14	31.75	6.5	24.75	10.5	27.25	13	29.75	14
Youngstown R2 (**)	...	...	...	...	...	...	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Youngstown Y1 (††)	...	...	...	...	...	...	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75
Wheatland, Pa. W9 ($)	23	+3.5	15	+8.5	7.5	+14	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	32.25	17	32.75	17.5	34.25	17.5	34.25	17.5	...	...	...	...
Alton, Ill. L1 ($)	30.25	15.75	30.75	16.25	32.25	16	32.25	16	23.25	6.75	23.25	6.75
Benwood, W. Va. W10(††)	32.25	17.75	32.75	18.25	34.25	18	34.25	18	25.5	8.75	25.5	8.75
Etna, Pa. N2 (†)	32.25	17.75	32.75	18.25	34.25	19	34.25	19	25.5	8.75	25.5	8.75
Fairless, Pa. N3	27.75	....	28.25	....	29.75	...	29.75	...	21	...	21	...
Fontana, Calif. K1 (**)	19.25	3.25	19.75	3.75	21.25	4	21.25	4	12.5	+5.25	12.5	+5.25
Ind. Harbor, Ind. Y1 (††)	31.25	16.75	31.75	17.25	33.25	17	33.25	17	...	...	...	...
Lorain, O. N3 (*)	32.25	21.5	32.75	22	34.25	20.5	34.25	20.5	...	...	...	...
Sharon, Pa. M6	32.25	16.25	32.75	16.75	34.25	17	34.25	17	...	...	...	...
Sparrows Pt., Md. B2 ($)	30.25	16	29.75	15.5	32.25	15.5	32.25	15.5	23.5	6.25	23.5	6.25
Youngstown R2 (**)	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Youngstown Y1 (††)	32.25	17.75	32.75	18.25	34.25	18	34.25	18	...	...	...	...
Wheatland, Pa. W9 (‡)	32.25	17.75	32.75	18.25	34.25	18	34.25	18	...	...	...	...

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 5c; ($), over 9c to 11c inclusive; (††), 10.50c-11.50c; (**), 11c-13c; (‡‡), 11c; with discounts adjusted on price of zinc at time of shipment.

Stainless Steel

(Representative prices, cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	41.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	41.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	44.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	43.75	43.75
304L	...	...	36.75	...	...	42.75	45.25	49.00	49.00
306	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	48.00	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	62.00	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	62.75	67.50	69.00	72.25	72.25
314	...	...	...	...	...	...	69.00	74.50	....
316	28.00	36.25	46.75	54.50	53.25	55.60	59.00	62.75	62.75
316L	...	...	52.50	....	58.25	61.00	64.25	67.75	67.75
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	77.00
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	80.25	80.25
321	22.75	29.50	35.25	40.75	41.00	42.00	46.00	50.50	50.50
330	...	...	58.00	...	...	68.50	70.00	73.75	77.75
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	59.25	59.25
403	...	...	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	39.75	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	34.25	34.25
416	...	...	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	52.75	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	34.75	34.75
430F	...	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	35.25	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	33.75	38.25	50.25	39.50	40.75	50.75	59.75
501	....	....	14.00	14.50	21.25	16.00	18.25	29.00	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	30.00	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co., Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co., Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

Cladding Stainless	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%	Sheets, Copper Base Both Sides
302	....	31.00	31.00	77.00
304	27.60-28.10	32.50-33.20	32.50	77.00
310	36.50	41.00	....	144.00
316	32.60-33.10	37.70-42.75	42.75	....
318	37.00-37.50	42.20-42.70	....	....
321	29.36-29.80	31.40-37.00	37.00	111.00
347	30.40-30.90	35.50-40.50	40.50	130.00
405	23.40-23.90	30.60-31.10	....	....
410	22.90-23.40	30.10-30.60	....	....
430	23.40	30.60	....	....
Inconel	46.90	61.90	....	165.00
Nickel	38.30	51.70	....	....
Monel	39.70	52.66	....	....
Copper*	....	....	46.00	....

	Strip, Carbon Base: Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
Copper*	28.85	35.85	25.00	32.25

* Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; Copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.26	5% Cr Hot Work	0.405
Extra Carbon	0.31-.315	W-Cr Hot Work	0.425
Special Carbon	0.37	V-Cr Hot Work	0.445
Oil Hardening	0.405	Hi-Carbon-Cr	0.73

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.030
18.25	4.25	1	4.75	...	2.245-2.415
18	4	2	9	...	2.615
18	4	2	....	...	1.705
18	4	1	....	...	1.540
14	4	2	5	...	2.185
13.75	3.75	2	5	...	2.185
13.5	4	3	....	...	1.805
9	3.5	....	....	...	1.115
6	4	2	....	5	1.045
6	4	3	....	6	1.290
1.5	4	1	....	8.5	0.900

Tool Steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	52.38	52.88	....	....
Birmingham U5	....	52.88	56.50†	....
Gadsden,Ala. R2	52.38	52.88	....	....
Woodward,Ala. W15	52.38	52.88	56.50†	....
Cincinnati, del.	....	60.43	....	....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	....
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No.Tonawanda,N.Y. T9	....	56.50	57.00	57.50
Boston, del.	66.65	67.15	67.65	....
Rochester,N.Y., del.	59.02	59.52	60.02	....
Syracuse,N.Y., del.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Chicago R2	56.00	....	56.50	....
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee, del.	58.17	58.67	58.67	59.17
Muskegon,Mich., del.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron,O., del. from Cleve.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem,Pa. B2	58.00	58.50	59.00	59.50
NewYork, del.	....	62.28	62.78	....
Newark, del.	61.02	61.52	62.02	62.52
Birdsboro,Pa. B10	58.00	58.50	....	....
Chester,Pa. C31	48.00	48.50	49.00	....
Philadelphia, del.	49.66	50.16	50.66	....
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Troy,N.Y. R2	58.00	58.50	59.00	....
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Ambridge, Aliquippa, del.	57.37	57.87	57.87	58.37
McKeesRocks, del.	57.04	57.54	57.54	58.04
Lawrenceville,Homestead, Wilmerding,Monaca, del.	57.66	58.16	58.16	58.66
Verona,Trafford, del.	58.19	58.69	58.69	59.19
Brackenridge, del.	58.45	58.95	58.95	59.45
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....
Monessen,Pa. P7	56.00	....	....	....

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., del.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	60.50	61.00	61.50	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	56.00	56.50	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T2	....	52.50*	56.50	....
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, del.	61.76	62.26	....	....

* Low phos. southern grade. † Phos., 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.00 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$65.00
Buffalo H1	66.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$80.50
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	85.00
Keokuk, OH & Fdry, 12½ lb pigiets, 16% Si, frgt allowed K2	88.00
Wenatchee,Wash. OH & Fdry, freight allowed K2	85.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate A7	$61.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, del.	67.55
Troy,N.Y. R2	64.00

Warehouse Steel Products

Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Birmingham and St. Paul, 15 cents; New York and Boston, 10 cents; Buffalo, 25 cents on C.R. sheets, galv. sheets, C.F. and alloy bars and 20 cents on other commodities; Philadelphia, 25 cents on C.F. and alloy bars; Seattle and Spokane, Wash., no charge.

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	Stainless Type 302‡‡	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.§	H.R. Alloy 4140††*		Carbon	Floor
Baltimore	6.22	7.51	7.77	....	6.89	...	6.88	8.52[6]	12.04	6.92	6.57	7.96**
Birmingham	6.35	7.35	8.25[2]	....	6.60	...	6.50	9.10	...	6.65	6.65	8.45
Boston	7.23	8.23	9.52	44.78[9]	7.47	...	7.20	8.60	12.45	7.49	7.37	8.50
Buffalo	6.35	7.40	8.79	....	6.70	...	6.50	7.85	12.15	6.72	6.65	7.90
Carnegie, Pa.	6.38	...	8.30	....	6.72	...	6.51	7.85	12.15	6.72	6.65	6.90
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	...	7.10	8.37	...	7.10	7.10	8.37
Chicago	6.38	7.38	8.30	45.55	6.62	...	6.51	7.50	11.90	6.69	6.52	7.64
Cincinnati	6.49	7.37	8.25	45.80	6.86	...	6.75	7.80	12.15	6.86	6.81	7.89
Cleveland	6.38	7.38	8.45	45.66	6.72	...	6.57	7.60	11.96	7.02	6.69	7.81
Detroit	6.57	7.57	8.58	43.50	6.90	7.36	6.79	7.79	12.10	7.16	6.80	7.83
Erie, Pa.	6.35	7.38	8.30	....	6.70	...	6.50	7.45[6]	...	6.60	6.52	7.61
Houston	7.35	7.80	9.93	....	7.70	9.30	7.70	9.50	...	7.25	7.35	8.75
Los Angeles	7.40	9.25	9.80	50.15	7.75	11.75	7.35	10.05	13.20	7.55	7.35	9.45
Milwaukee	6.47	7.47	8.39	....	6.71	...	6.60	7.69	11.99	6.86	6.61	7.73
Moline, Ill.	6.73	7.73	8.65	....	6.97	...	6.86	7.85	...	6.81	6.87	...
New York	6.97	7.91	8.79	44.45	7.56	...	7.37	8.73[6]	12.28	7.38	7.27	8.68
Norfolk, Va.	7.00	...	...	....	7.10	...	7.10	8.60	...	7.10	7.10	7.95
Philadelphia	6.19	7.44	8.23	41.98[9]	6.96	8.80	6.74	8.19[6]	11.96	6.54	6.49	7.51**
Pittsburgh	6.38	7.38	8.30	45.50	6.72	...	6.51	7.85	11.99	6.69	6.52	7.64
Portland, Oreg.	7.60	8.75	9.70	48.50	7.85	...	7.55	10.95	14.00	7.50	7.45	9.35
Richmond, Va.	6.43	7.39	8.67	....	6.77	...	6.71	8.33	...	7.08	6.65	8.08
St. Louis	6.67	7.67	8.59	43.89	6.91	...	6.80	7.89	12.19	7.09	6.81	7.93
St. Paul	7.03	8.03	8.96	....	7.28	...	7.16	8.26	...	7.12	7.19	8.30
San Francisco	7.55	8.95	9.35	48.15	7.80	...	7.35	10.05	13.20	7.50	7.40	9.45
Seattle	8.10	9.80	10.15	50.50	8.20	...	7.80	10.95	13.65	7.75	7.80	9.60
Spokane	8.35	9.65[7]	10.05	....	7.80	...	7.80	10.85[8]	14.40	7.45	7.55	9.60
Washington	6.70	7.99	7.97	....	7.37	...	7.38	9.09	...	7.31	7.05	8.16

*Prices do not include gage extras; †prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extras excluded); ‡includes 35-cent special bar quality extra; §as rolled; **⅛-in. and heavier; ††as annealed; ‡‡prices include $2 for crating; Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over, except in Seattle where base is 2000 to 9999 lb; stainless sheets, 8000 lb except in New York and Boston where base is 10,000 lb. [2]—500 to 9999 lb; [6]—4000 lb and over; [8]—1000 to 1999 lbs; [9]—1000 lb and over; [7]—1500 lb to 3999; [8]—under ½ in.; [9]—f.o.b. local delivery in lots of 10,000 lb and over.

SIZE EXTRAS

Gage No.	Thickness Ordering Limits Inches	Width in Inches—Coils Under 3 to 2	3 to 6	6 to 9	Over 9 to 12
14	.0821-.0710	1.15	1.05	.95	.80
15	.0709-.0636	1.20	1.10	.95	.80
16	.0635-.0568	1.25	1.15	1.00	.85
17	.0567-.0509	1.25	1.15	1.05	.85
18	.0508-.0449	1.30	1.20	1.10	.90
19	.0448-.0389	1.35	1.25	1.10	.90
20	.0388-.0344	1.40	1.30	1.15	1.00
21	.0343-.0314	1.45	1.35	1.20	1.05
22	.0313-.0284	1.50	1.40	1.30	1.15
23	.0283-.0255	1.60	1.50	1.35	1.25
24	.0254-.0225	1.70	1.60	1.45	1.35
25	.0224-.0195	1.80	1.65	1.50	1.40
26	.0194-.0172	1.95	1.80	1.60	1.50
27	.0171-.0157	2.15	2.00	1.85	1.60
28	.0156-.0142	2.30	2.15	2.00	1.70

Slit Sheet Pricing: A New Cost Cutter

Four new brackets of width extras cover cold-rolled material down to 2 inches. New method saves up to $77 a ton over old system

NOW you can buy narrow cold-rolled slit sheets from the mill without paying for cold-rolled strip, a higher-priced product.

The new pricing setup being announced by mills covers cold-rolled sheet in widths of 2 through 12 inches and in thickness of 14 through 28 gage. Previously, cold-rolled sheet was priced only in widths over 12 inches. Material 12 inches and less in width took cold-rolled strip prices.

The new prices apply only to material of cold-rolled sheet tolerances. Where special edge, temper, finish or quality is needed, a buyer will get strip that has been rolled as a single strand and will pay cold-rolled strip prices. Narrow slit sheet will suffice in about 85 per cent of the needs for narrow cold-rolled material (see STEEL, Aug. 16, 1954, p. 151).

How It's Done—To extend cold-rolled sheet pricing to the narrower material, mills set up four new brackets of width extras (see accompanying table). Narrowest width taking cold-rolled sheet pricing is 2 inches. Widths under that will continue to take cold-rolled strip pricing. Because of mechanical limitations, a few mills will not offer sheet as narrow as 2 inches; some will stop at 3 inches while others may stop at 4.

Lowest price extra for slit sheet in the new brackets is 80 cents a hundred pounds. The extras increase as widths narrow and thicknesses decrease. The narrower the material desired, the more slitting necessary; the thinner the material, the more that must be handled per hundred pounds.

The new slit sheet pricing does not cover material heavier than 0.0821 inch (14 gage). Material over 12 inches in width will continue to be priced in gages heavier than 14.

Cost Cutting—Pricing of narrow material on a cold-rolled sheet basis makes coils $13 to $77 a ton cheaper than if priced as cold-rolled strip.

In addition to width extras for coils of the narrow material, price extras are established for cut lengths, item quantity and coil weights.

The book showing the new extras on narrow slit sheet also carries a reduced price extra for intermediate temper in sheets 24 inches and wider. It's now 45 cents a hundred pounds. It had been 50 cents. Another change is the addition of a $5-per-coil charge for protective oil coating of exposed surfaces, to assist in transit protection.

The Aim—Mills are adopting the new pricing schedule on narrow slit sheets in an effort to capture car lot business they are losing to processors who slit sheets for a fee. Mills are charging no extra for quantities over 20,000 pounds. For amounts less than that the item quantity extra ranges from 25 cents to $3 a hundred pounds.

A new pricing schedule for hot-rolled sheets slit into narrow widths is due soon.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 213 & 214

What looks like a strong undercurrent of demand is developing in the light, flat-rolled steel market. Though consumers of hot-rolled and cold-rolled sheets are still buying largely on a hand-to-mouth basis, there is increasing ordering for stock. Of still greater significance, automotive demand is beginning to swell.

In the Midwest, anticipated sheet demand from the automakers is brightening the fourth quarter outlook noticeably. One Chicago district mill stepped up its sheetmaking operations over 10 per cent last week. At Pittsburgh, a slight improvement in buying of hot and cold-rolled sheets is largely attributed to automotive and appliance requirements.

Steel Bars . . .

Bar Prices, Page 212

Merchant bar business appears to be inching upward slowly. But despite increasing signs of returning strength, order volume is limited.

Considerable hope for a smart upturn in demand over coming weeks is pinned on anticiapted improvement in automotive requirements.

In the Chicago district, trade sentiment is somewhat more optimistic than at other consuming and producing points. Observers there profess to see brighter market prospects for demand from the farm implement industry and miscellaneous consumers. Inventories are down and should stimulate buying.

Reflecting the relatively easy supply situation prevailing and the increasing competitive pinch for tonnage, a Detroit producer last week cut its base prices $2 per ton on hot-rolled alloy bars to 5.075c, mill; $3 per ton on cold-finished carbon bars to 5.40c; $2 on cold-finished alloy bars to 6.625c. It also effected a reduction of $2 on alloy forging blooms to $86, and $1 on alloy ingots to $65.

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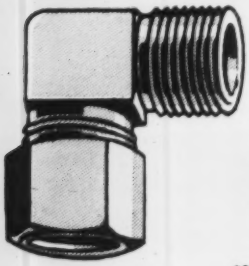

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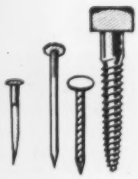

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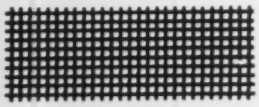
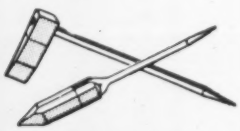


INDUSTRIAL WIRE CLOTH



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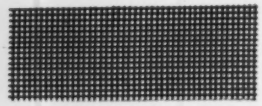

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Pig Iron . . .

Pig Iron Prices, Page 217

Pig iron sellers believe a turn upward has been made. Sales have increased slightly this month over August and are expected to make further gains in October. There is still no sign of the long awaited spurt in automotive business.

Market sentiment in most districts is improved. Reflecting better stock position, Republic Steel Corp. relighted its Troy, N. Y., stack. It had been on the inactive list a couple of months due to lack of business. The corporation also lighted No. 3 furnace at its Cleveland Works. Granite City Steel Co.'s one operating blast furnace was switched to foundry iron production for two days last week.

Mystic Iron Works' furnace at Everett, Mass., has taken in 11,400 tons of ore from Venezuela and 105,000 tons from Labrador, the first from that new source.

Tubular Goods . . .

Tubular Goods Prices, Page 216

Oil country buyers of seamless pipe are no longer interested in ordering for a calendar quarter at a time. With seamless increasingly plentiful, they are buying "closer to the vest".

Freight absorption on seamless is not far distant now that supplies are more plentiful.

Three factors loosened the seamless market. 1. Reduced requirements for ammunition. 2. Installation of three new mills, and 3. Increase in imports.

The new mills are those of Republic Steel Corp. at Chicago, Colorado Fuel & Iron Corp. at Pueblo, Colo., and Lone Star Steel Co. at Daingerfield, Tex.

Foreign seamless from Belgium, Germany and Italy is flowing into Gulf coast ports in large quantities. It is underselling (by $5 to $15 per ton) domestic pipe delivered from Pittsburgh.

Complaints about quality are increasingly numerous from buyers. That's considered a sign of easier supply conditions.

Because of higher zinc prices producers of galvanized pipe last week reduced discounts on this item.

Plans for construction of the world's longest undersea pipeline to collect oil and natural gas from deep water wells in the Gulf of Mexico were confirmed last week by Socony-Vacuum Oil Co.

Plates . . .

Plate Prices, Page 212

Prospects are improving for plate tonnage over coming weeks, though current demand is spotty. Navy work is definitely more promising; and even now some of the tonnage coming out is fairly sizable. Also, railroad equipment requirements provide encouragement.

Steel Output Nudges Upward

Steel production nudged upward during August. Output of ingots and steel for castings during the month was reported at 6,661,000 net tons by the American Iron & Steel Institute.

The increase is 33,000 tons over the July total of 6,627,597 tons, the smallest output since the strike-ridden months of June and July, 1952. Only 1,639,789 and 1,627,446 tons, respectively, poured from the furnaces.

Compared with August a year ago, output for the month was down 2,744,580 tons.

Cumulative production in the first eight months of this year was 57,420,229 net tons. In the like period of 1953, output totaled 76,627,189 tons. The eight months' total for 1954, however, was 3.0 per cent higher than the average for the three years 1947 to 1949 inclusive.

Structural Shapes . . .

Structural Shape Prices, Page 212

Building steel requirements appear a mite less pressing than they have been all year long. At any rate, demand for structural shapes has leveled off some, though still substantial. It looks like activity in this market, while still brisk, is passing its peak, at least for the present.

Some slackening was to be expected, considering structural demand has been outstanding in the steel products markets since early this year. Fabricators' inventories are in better balance, and they are not under the pressure of earlier months. Some seasonal letdown is normal for the closing months of the year.

In the main, supplies of standard structurals are adequate. But this does not hold for wide flange beams, particularly heavier sections.

The situation varies from district to district, demand presenting something of a mixed picture over the country. For example, while business leveled off in the East, New England structural tonnage up for estimates is mounting.

Bridge requirements continue outstanding in current demand, but a good diversity of other projects also is reported. In New England tonnage is being sought for a bridge over the Connecticut river, West Springfield, Mass., this being among the first Massachusetts turnpike contracts. This highway will take close to 50,000 tons.

Period	OPEN HEARTH Net tons	OPEN HEARTH Per cent of capacity	OPEN HEARTH ‡Index	BESSEMER Net tons	BESSEMER Per cent of capacity	BESSEMER ‡Index	ELECTRIC Net tons	ELECTRIC Per cent of capacity	ELECTRIC ‡Index	TOTAL Net tons	TOTAL Per cent of capacity	TOTAL ‡Index	Calculated weekly production (Net tons)	Number of weeks in month
1954														
January	7,256,526	78.3	113.3	260,453	64.0	74.1	434,507	48.9	121.7	7,951,486	75.3	111.8	1,794,918	4.43
February	6,523,213	77.9	112.8	174,253	47.4	54.9	385,771	48.1	119.6	7,083,237	74.3	110.2	1,770,809	4.00
March	6,649,667	71.7	103.8	207,726	51.1	59.1	432,207	48.7	121.0	7,289,600	69.0	102.5	1,645,508	4.43
1st Qtr.	20,429,406	75.9	109.9	642,432	54.4	63.0	1,252,485	48.6	120.8	22,324,323	72.8	108.1	1,735,950	12.86
April	6,365,326	70.9	102.7	162,657	41.3	47.8	442,954	51.5	128.2	6,970,937	68.1	101.3	1,624,927	4.29
May	6,817,951	73.6	106.4	198,063	48.7	56.4	456,724	51.4	127.9	7,472,738	70.7	105.0	1,686,848	4.43
*June	6,702,006	74.7	108.1	207,666	52.7	61.1	453,962	52.8	131.3	7,363,634	72.0	107.0	1,716,465	4.29
*2nd Qtr.	19,885,283	73.1	105.8	568,386	47.6	55.1	1,353,640	51.9	129.1	21,807,309	70.3	104.4	1,676,196	13.01
*1st Half	40,314,689	74.5	107.8	1,210,818	51.0	59.0	2,606,125	50.3	125.0	44,131,632	71.5	106.2	1,705,900	25.87
*July	6,040,120	65.3	94.3	205,313	50.6	58.4	382,164	43.1	107.0	6,627,597	62.9	93.2	1,499,456	4.42
‡Aug.	6,023,000	65.0	94.0	218,000	53.6	62.0	420,000	47.3	117.6	6,661,000	63.1	93.6	1,504,000	4.43
1953														
January	8,841,679	101.4	138.0	350,200	88.9	99.7	706,083	81.2	197.7	9,897,962	99.1	139.1	2,234,303	4.43
February	7,939,299	100.8	137.2	329,389	92.6	103.8	664,091	84.6	205.9	8,932,779	99.1	139.0	2,233,195	4.00
March	9,050,773	103.7	141.3	354,710	90.0	101.0	762,615	87.7	213.5	10,168,098	101.8	142.9	2,295,282	4.43
1st Qtr.	25,831,751	102.0	138.9	1,034,299	90.4	101.4	2,132,789	84.5	205.7	28,998,839	100.0	140.4	2,254,964	12.86
April	8,493,909	100.5	137.0	334,605	87.7	98.4	717,024	85.2	207.4	9,545,538	98.7	138.7	2,225,067	4.29
May	8,925,163	102.3	139.3	354,577	90.0	100.9	717,340	82.5	200.8	9,997,080	100.1	140.5	2,256,677	4.43
June	8,394,502	99.4	135.4	332,060	87.0	97.7	677,917	80.5	196.1	9,404,479	97.2	136.6	2,192,186	4.29
2nd Qtr.	25,813,574	100.8	137.3	1,021,242	88.3	99.0	2,112,281	82.7	201.5	28,947,097	98.7	138.6	2,224,988	13.01
1st Half	51,645,325	101.4	138.1	2,055,541	89.3	100.2	4,245,070	83.6	203.6	57,945,936	99.4	139.5	2,239,889	25.87
July	8,316,342	95.5	129.8	324,068	82.4	92.2	635,263	73.2	177.9	9,275,673	93.1	130.4	2,098,569	4.42
Aug.	8,463,155	97.0	132.1	310,074	78.7	88.2	632,351	72.7	177.0	9,405,580	94.2	132.2	2,123,156	4.43

Note—The percentages of capacity operated are calculated on weekly capacities in 1954 of 2,092,342 net tons open hearth, 91,810 net tons bessemer and 200,397 net tons electric ingots and steel for castings, total 2,384,549 net tons; based on annual capacities as of Jan. 1, 1954 as follows: Open hearth 109,094,730 net tons, bessemer 4,787,000 net tons, electric 10,448,680 net tons, total 124,330,410 net tons.

Note—The percentages of capacity operated are calculated on weekly capacities in 1953 of 1,969,275 net tons open hearth, 88,934 net tons bessemer and 196,250 net tons electric ingots and steel for castings, total 2,254,459 net tons; based on annual capacities as of Jan. 1, 1953 as follows: Open hearth 102,677,980 net tons, bessemer 4,637,000 net tons, electric 10,232,190 net tons, total 117,547,470 net tons.

*Revised. †Preliminary figures, subject to revision. ‡Index of production based on average weekly production of the three years 1947-1948-1949.

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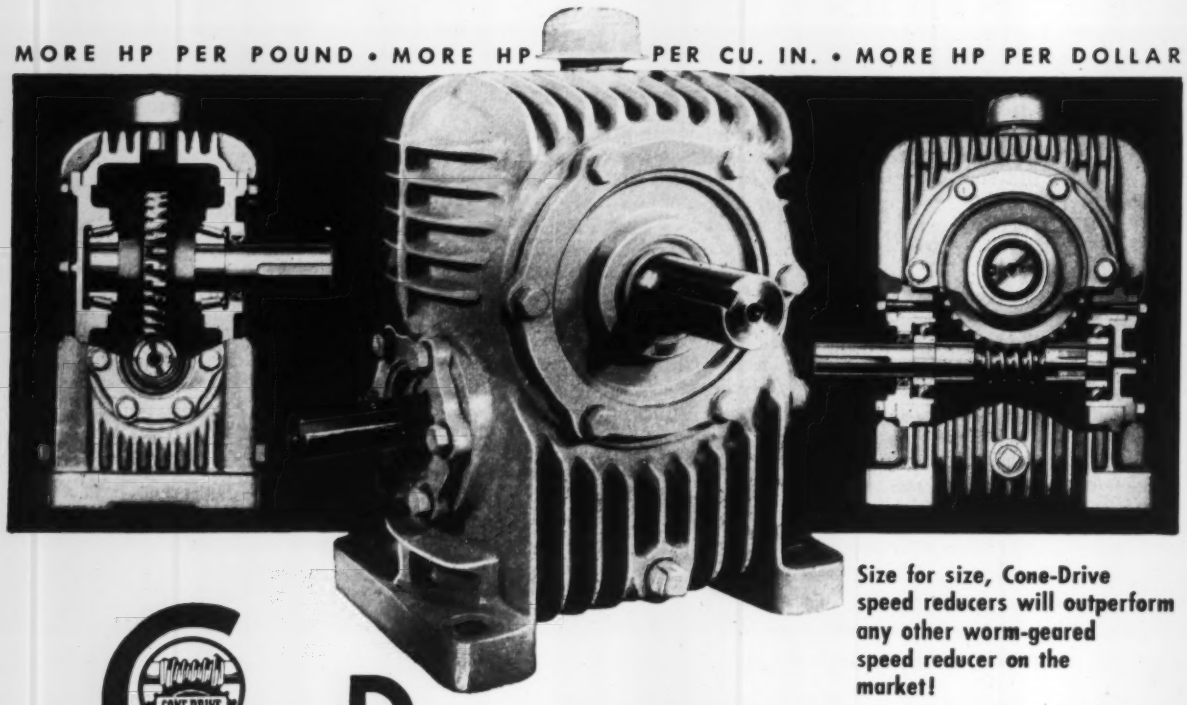

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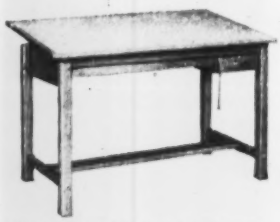

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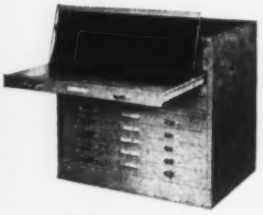

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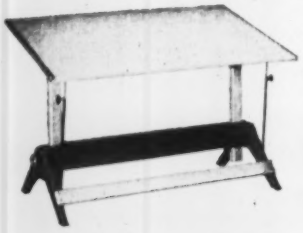

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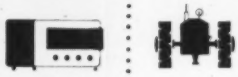

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Wire . . .

Wire Prices, Pages 214 & 215

Manufacturers wire is in somewhat better demand and a seasonal upturn is reported in merchant products. Early October is expected to see a substantial rise in demand for wire items used in production of automobiles nad appliances. Welded wire fabric output is at a record high.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

12,500 tons, superstructure, Philadelphia approach, Philadelphia-Gloucester bridge, Delaware River Port Authority, to Bethlehem Steel Co., Bethlehem, Pa.

3140 tons, manufacturing building, Peter Lorillard Co., Greensboro, N. C., through Lockwood Green Engineers Inc., to the Carolina Steel & Iron Co., that city.

2340 tons, state bridge work, Chatauqua and Erie counties, New York, through Johnson, Drake & Piper Inc., to Ernst Iron Works, Buffalo.

1905 tons, trestle, Erie Mining Co., Taconite Harbor, Minn., to Bethlehem Steel Co., Bethlehem, Pa.

1350 tons, office building, Diesel Construction Co., William street, New York, to Harris Structural Steel Co., that city.

1320 tons, state office building Syracuse, N.Y., through F. D. Rich Co., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

725 tons, state highway bridges, Duxbury-Kingston, Mass., to West End Iron Works, Cambridge, Mass.; Henly-Lundgren Co., Shrewsbury, Mass., sub-contractor.

700 tons, transit shed and warehouse, U. S. Naval Supply Depot, Newport, R. I., to A. O. Wilson Structural Co., Cambridge, Mass.; Gilbane Building Corp., Providence, R. I., general contractor; reinforcing steel to Plantations Steel Co., Providence.

600 tons, silicon plant, Linde Air Products, Long Reach, W. Va., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

500 tons, Shell Oil Co., refinery, Anacortes, Wash., reported to Consolidated Western Steel Corp., San Francisco.

490 tons, office building, Connecticut Light & Power Co., Wethersfield, Conn., to Topper & Griggs (Bethlehem Fabricators Inc.), Hartford, Conn. through A. F. Peaslee Inc., Springfield, Mass., General contractor.

460 tons, state highway bridges, Nashua, N.H., to American Bridge Division, U. S. Steel Corp., Pittsburgh; R. G. Watkins, Amesbury, Mass., and W. W. Wyman Co., contractors.

360 ton, club, Nassau county park, Salisbury, N. Y., through Laurance J. Rice Inc., to the Grand Iron Works, Bronx, N. Y.

355 tons, state bridge, Bronx county, New York, to Bethlehem Steel Co., Bethlehem, Pa.

315 tons, animal disease laboratory, Plum Island, N. Y., through the Stock Construction Co., to the Turi Engineering Co., New York.

300 tons, Shell refinery, Anacortes Wash. to Isaacson Iron Works, Seattle.

295 tons, St. Michaels district commerce high school, Liberty Ave., Brooklyn, N. Y., through E. Waters & Co., to Dreier Structural Steel Co., Inc., Long Island City, New York.

280 tons, recreation center, St. Johns Park, Brooklyn, N. Y., through the R. & S. Construction Co., to Schacht Steel Construction Inc., New York.

200 tons, state highway bridge, Manville, R. I., to American Bridge Division, U. S. Steel Corp., Pittsburgh; General Engineering Co., Providence, general contractor.

200 tons, state bridge, Nashua, N. H., to West End Iron Works, Cambridge, Mass.; Monroe-Langsroth Co., Boston, sub-contractor.

150 tons, textile trade school, New Bedford, Mass., to Builders' Iron Works, Somerville, Mass.

132 tons, state bridge work, Suffolk county, New York, through Hendrickson Bros., to Bethelehem Steel Co., Bethlehem, Pa.

(Please turn to page 226)

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In 1953 a leading Design trade magazine conducted a survey among 1902 manufacturing plants on the use of Internal Combustion Engines of less than 60 hp., as power components in equipment made for resale.

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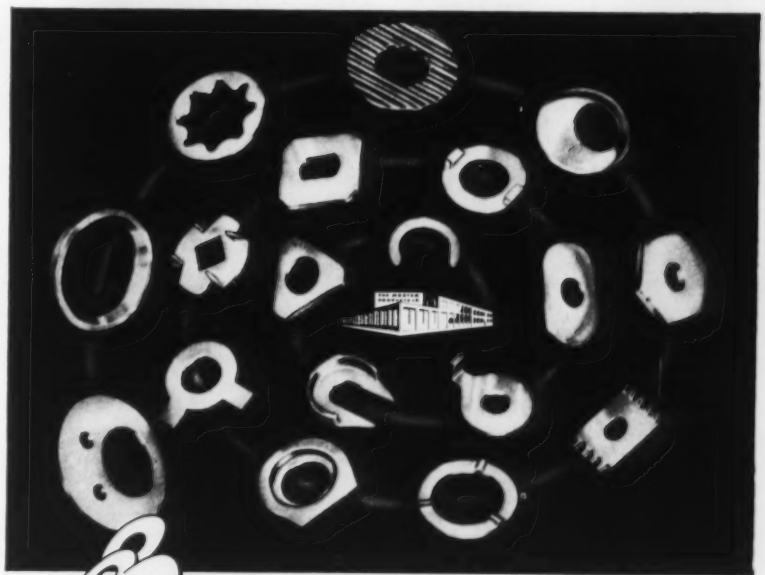

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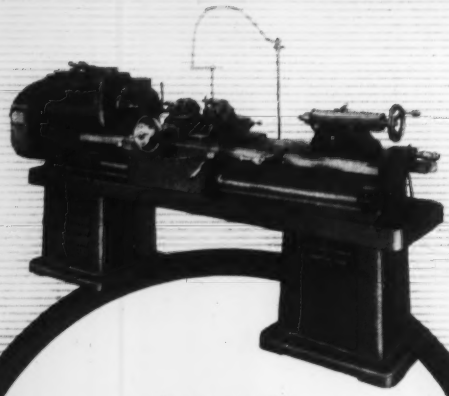

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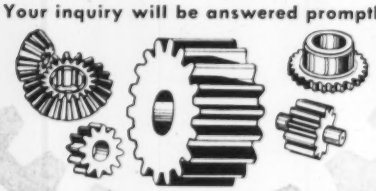

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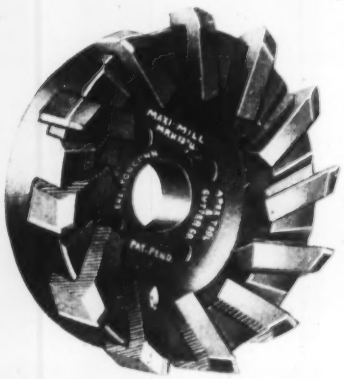

"APEX" manufactures inserted tools and milling cutters of all styles. Carbide-tipped cutters furnished when required.

APEX TOOL & CUTTER CO., INC., Shelton 13, Conn.

Current Ferroally Quotations

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C7% approx.). Base price per net ton $190, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, Philo, O.; Sheffield, Ala; Portland, Oreg. and Tacoma, Wash. Add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 29.95c per lb of contained Mn, carload packed 30.7c, ton lots 31.8c, less ton 33c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices 3c for max. 0.30% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lots 49.25c. Delivered. Spot, add 2c.

Electromanganese: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 1999 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.00c per lb or alloy, carload packed, 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.025% C (Simplex) 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 12c per pound of contained silicon; 1" x down, bulk 24.90c per pound of contained chromium plus 12.2c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe). Contract, 1" x D; packed, max 0.50%, carload $1.16, ton lots $1.18; less ton $1.20. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 9c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 50-55%, Si 2-3.5% max, C 0.5-1% max). $3.10. **Primos and High Speed Grades** (V 50-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12c per lb of contained Si, carload packed 13.6c, ton lot 15.05c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 13.5c pek pound contained silicon; carload packed 14.85c; ton lots, 16.05c; less ton, 17.4c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.4c per lb of contained Si, carload packed 15.7c, ton lot 16.85c, less ton 18.1c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 17.25c per lb of contained Si, carload packed 18.45c, ton lot 19.4c, less ton 20.45c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 25.25c per lb of alloy, ton lot 26c, less ton 27.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3% lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.05c per lb of briquet, c.l. packaged 12.85c, ton lot 13.65c, less ton 14.55. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.75c per lb of briquet. Packed c.l. 7.55c, ton lot 8.35c, less to 9.25c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.9c. Packed c.l. 7.7c, ton lot 8.5c, less ton 9.4c Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.80 per lb of contained W; 2000 lb W to 5000 lb W, $3.90; less than 2000 lb W, $4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $12 per lb of contained Cb, less ton $12.05. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $6.25 per lb of contained Cb plus Ta, deld.; less ton lots $6.30.

Silicax Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20 % each Si, Mn, Al; bal. Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, Pa., $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

(*Concluded from Page 223*)

130 tons, engine build-up shop, Maguire Air Force Base, Wrightstown, N. J., through B. J. Lucarelli Inc., to the Allied Steel Co.

115 tons, Barrett pumping station, Long Island Lighting Co., Island Park, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.

115 tons, Windham regional school, Willimantic, Conn., to Connecticut Steel Co., New Haven, Conn., through Felix Buzzi & Sons, Torrington, Conn., general contractors.

106 tons, fabricated and delivered, direct bid to Massachusetts State Highway Department, Worthington, Mass., to Builders' Iron Works, Somerville, Mass.

STRUCTURAL STEEL PENDING

15,670 tons, Hampton Roads tunnel and bridges contract No. C-1; bids Oct. 8, Department of Highways, Richmond, Va. Contract No. C-2, approach bridges, includes 896 fifty-foot prestressed concrete beams; alternate No. 1, structural steel stringer construction, 80-foot spans; alternate No. 2, eighty-foot span prestressed concrete construction.

6000 tons, Fair buildings, Louisville, Ky., bids Sept. 16 and Sept. 23.

3000 tons, navigation locks, fish ladders, etc., The Dalles dam; also 125 tons for guides, etc.; general contract to Atkinson-Ostrander Co., joint low bidders to U. S. Engineer, $12,708,179.

2275 tons, reconstruction, Third Ave. bridge over Harlem river, New York, general contract to Terry Contracting Inc., that city.

3580 tons, bridge superstructure, Massachusetts turnpike, Connecticut river, West Springfield-Chicopee, Mass.; bids Sept. 28, Boston.

1060 tons, Washington Skagit river bridge; general contract to Peter Kiewit Sons Co., Longview, Wash., low $1,328,367.

500 tons, viaduct and structures, New Haven railroad, Bridgeport, Conn.; bids in.

460 tons, Boeing flight center shops, etc., Moses Lake, Wash.; D. M. Drake Co. and George A. Fuller, Portland, Oreg., joint low, $5,514,000.

800 tons, Nassau county jail, Hempstead, N. Y., bids Sept. 28.

275 tons, three state bridges, Billerica-Chelmsford, Mass.; bids Sept. 21, Boston; also 107 tons reinforcing bars.

REINFORCING BARS . . .

REINFORCING BARS PLACED

535 tons, alterations drydock Puget Sound Navy Yard, to Bethlehem Pacific Coast Steel Corp., Seattle; Butler Construction & Engineering Co., Seattle, general contractor.

160 tons, Shell oil refinery, Anacortes, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

110 tons, launching site, Midway, Wash., to Soule Steel Co., Seattle.

REINFORCING BARS PENDING

3000 tons, The Dalles navigation locks, Columbia river; general contract awarded by U.S. Engineer, Portland, Oreg.

1800 tons, Hampton Roads tunnel, contract C-1; bids Oct. 8, Department of Highways, Richmond, Va.; also contract C-2, north and south approach bridges, 825 tons, reinforcing; alternate No. 1, 575 tons, and alternate No. 2, 530 tons. Reinforcing tonnage is exclusive of prestressed concrete requirements.

1250 tons, including other metal items, Glendo earthfill dam, Wyoming; bids to be invited about Sept. 23 by Bureau of Reclamation, Denver.

550 tons, Washington state Skagit river bridge; general contract placed.

816 tons, Naylor siphon, Columbia Basin project; bids to Bureau of Reclamation, Ephrata, Wash., Sept. 30.

125 tons, Crescent Lake project, Bend, Oreg.; bids to Bureau of Reclamation, Denver, about Sept. 30.

PLATES . . .

PLATES PLACED

200 tons, addition to Shell Oil Co. tank farm, Seattle, to General American Transportation Co., Ogden, Utah.

100 tons, form plates, The Dalles dam, to Consolidated Western Steel Corp., Seattle; Atkinson-Ostrander Co. general contractor.

PIPE . . .

CAST IRON PIPE PENDING

1000 tons, if cast iron is bought, Fairbanks, Alaska, system; Peter Kiewit Sons Co., Seattle, low $1,287,423 to Alaska Public Works.

500 tons, Boeing flight center, Moses Lake, Wash.; general bids in.

160 tons, system improvement; bids to Hermiston, Oreg. Sept. 15

85 tons, 5100 ft 6-inch; bids in at Kent, Wash.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Canadian National railways, 127 diesel locomotive units; bulk of the equipment will be built by General Motors Diesel Ltd., Hamilton, Ont., the Montreal Locomotive Works Ltd., Montreal, and the Canadian Locomotive Co. Ltd. Two builders in this country will participate. Electro Motive Division, General Motors Corp., LaGrange, Ill., will build fifteen 1750-hp freight road switchers and two 1750-hp passenger road switchers and American Locomotive Co., four 1600-hp road switchers.

RAILROAD CARS PLACED

Long Island, 125 single deck coaches, to Pullman-Standard Car. Mfg. Co., Chicago.

Southern Pacific, 6 dome-lounge cars, to own shops.

Union Pacific, 35 sleeping cars, to the Pullman-Standard Car Mfg. Co., Chicago.

RAILROAD CARS PENDING

Atchison, Topeka & Santa Fe, 1350 freight cars of miscellaneous types, bids asked.

Northern Pacific, 1000 box cars, bids asked.

Missouri-Kansas-Texas, 500 box cars, bids asked; also six passenger coaches.

Reading, 1200 freight cars, comprising 1000 standard twin hoppers and 200 seventy-ton gondolas; bids asked.

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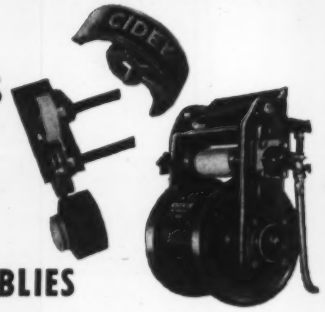

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Ores

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 52-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%	20.00
N. African hematite (spot)	nom. 20.00-22.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, before duty

Foreign Wolframite, good commercial quality	$24.00-25.00
Domestic sheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, 90c-92c per long ton unit c.i.f. U. S. ports, duty for buyer's account: 46-47%, 80c-83c.

Chrome Ore

Gross ton f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $40.00-$42.00
48% 3:1	42.00-44.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$19.00-$20.00
48% no ratio	nom. 34.00

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb, Mo content mines, unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

50-60%	$3.80-$4.20
60-65%	4.65-4.75

Vanadium Ore

Cents per lb V_2O_5 content, deld. mills

Domestic	31.00

Refractories

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill. Stevens Pottery, Ga., Woodbridge, N. J., $109; Salina, Pa., $114; Niles, O., $120; Los Angeles, Pittsburg, Calif., $132.30

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115; Warren, Niles, O., Hays, Pa., $120; E. Chicago, Ind., Joliet, Rockdale, Ill., $125; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillion, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Maxico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala. $212.80.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Jonhstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $109; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa., $174; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $179; Danville, Ill., $169.30.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $225; Danville, Ill., $258; Clearfield, Pa., $252.

Dolomite

Domestic dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Nario, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $14.60; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite

Domestic, deadburned bulk; Luning, Nev., $38.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-$15.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearney, N. J., ovens	$24.00
Everett, Mass., ovens	
New England, deld.	*26.05
Chicago, ovens	24.50
Chicago, deld.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, deld.	28.12
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.00
Buffalo, deld.	26.25
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.00
Swedeland, Pa., ovens	23.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, O. deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	40.00
Toluol, one deg	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $35-$36; 70%, $32-$33; 60%, $28-$29. Imported, net ton, duty paid, metallurgical grade: European, $28-30; Mexican, $25.50.

Electrodes

(Threaded with nipple, unboxed f.o.b. plant)

GRAPHITE

Diam. (Inches)	Length (Inches)	Per 100 lb
2	24	$43.50
2½	30	28.00
3	40	27.25
4	40	26.00
5½	40	25.75
6	60	23.25
7, 8, 9, 10	60	21.00
12, 14	72	20.50
16	72	20.00
17	60	20.50
18	72	20.50
20	72	20.00

CARBON

40	100	$8.95
40, 35, 30	110	8.95
30	84	9.10
24	96	8.90
24	72, 84	9.10
20	90	8.95
20	84	9.10
17	72	9.10
17	60	9.50
14	72	9.50
14, 12, 10	60	10.30
8	60	10.55

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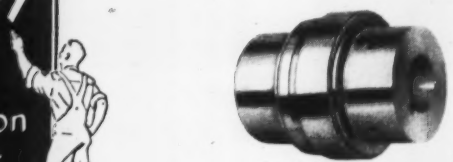

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No lubrication required. Provide positive protection against vibration, torque, shock of intermittent loads. Cushions changed without shutdown. Every duty from 1/6 to 2500 hp.

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VARIABLE SPEED PULLEYS:

Quickly installed on new or old equipment. Change speed while machine is running. Ratios to 3 to 1. Fractional to 10 hp.

SELECT-O-SPEED TRANSMISSION:

Economical as compared to other variable speed transmissions. Instant adjustment over wide range of speeds. Hand wheel or lever control. Ratios to 10 to 1. Fractional to 5 hp.

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UNIVERSAL JOINTS:

Precision ground. Finest alloy steel. No binding, backlash or end play. 13 sizes. Diameters ½ to 4 in. Bores ¼ to 2 in. Lengths 2 to 10⅝ in.

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Easily Installed
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Efficient, Long Lasting

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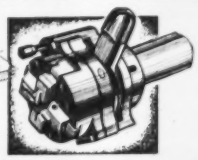

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TO YOUR REQUIREMENTS
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BOX 32 WYOMING, PA.

Scrap . . .

Scrap Prices, Page 230

Boston — Either being loaded or shipped for export, about 30,000 tons of scrap, mostly steel, have lowered yard stocks within the $3 freight area of Boston. Some cast iron, several thousand tons, moved from Portland, Me.

Domestic buying is slow, both steel and cast iron. For export, up to $25 is paid for No. 1 heavy melting. No. 2 grade is in relatively lighter demand for shipment abroad.

New York — Brokers advanced prices on No. 2 bundles to a range of $16.50 to $17.50, up $1. They also raised prices on several other grades, indicating increased interest by domestic consumers.

Washington—Vacations and slackened demand for steel resulted in a drop of 11 per cent in consumption of ferrous materials during July, reports the Bureau of Mines. Exclusive of strike months, consumption of scrap during the month was the lowest since July, 1949. Pig iron use was smallest since February, 1950.

The daily consumption rate of scrap and pig iron (compared with that of the preceding month) was 18 per cent and 10 per cent less, respectively. Total metal, 7,943,000 gross tons, consisted of 49.6 per cent scrap and 50.4 per cent pig iron. This compares with 53 per cent and 48 per cent, respectively, in June.

Stocks of ferrous scrap held by consumers totaled 5,634,000 gross tons, a slight decrease from June. The 2,458,000 gross tons of pig iron held in stock by consumers and suppliers was up 4 per cent from the June total.

Philadelphia — Movement of steel scrap abroad continues to impart strength to the local market. Shipments in September will total around 25,000 tons, up slightly from August tonnage.

Export prices are steady. This is reflected in unchanged prices on domestic account on items moving abroad—No. 1 heavy melting, No. 2 heavy melting, No. 1 bundles and No. 2 bundles.

Domestic buying is slack, although low phos structurals and plate are higher, $30 to $31 delivered.

Pittsburgh—Increased activity at foundries pushed brokers' asking prices on No. 1 cupola scrap up $1 a ton.

In the steelmaking grades, cut structurals in 5 ft lengths are up $1, the new quotation being $32 to $33. This increase was prompted by the earlier rise of $1 on No. 1 grade.

Buffalo—Steady strength and price advances of 50 cents to $1.50 per ton feature trading in the scrap market. A leading mill purchased about 10,000 tons of steelmaking grades at prices $1.50 above recent levels. Blast furnace items joined the advance with a 50 cent rise.

Cleveland—The mills aren't buying much in the way of tonnage, but the outlook for the scrap market in this and adjoining consuming areas continues to strengthen.

The trade hopes for an early fall pickup in consumption. And the reported sale of 10,000 tons of steelmaking grades to a Buffalo mill at $1.50 per ton above the recently quoted market lends strength. Slowing down of auto production for model changeovers is another factor for strength in scrap. It means the flow of material will be off sharply, possibly as much as 25 per cent.

Cincinnati — September looks like it will be a moderately low volume month in local scrap brokerage circles. A sale of short rails pushed the price up $1 to a range of $44 to $45. All other prices are unchanged.

Detroit — Scrap prices held unchanged last week, but increased steel production lends an under-current of strength.

Chicago—Little change in scrap market activity is noted. Prices are steady. In one instance, however, a dealer had to pay over $50 for rail scrap to meet a commitment.

St. Louis—Scrap market is marked by an improved psychology not yet reflected in sales or prices. Optimism is building up though no large tonnages are sought or offered.

Los Angeles—Dealers' third quarter sales should exceed those of the two previous quarters by 10 per cent.

Seattle — Scrap supplies and demand are well balanced. Prices are firm at $25 and $21 for No. 1 and No. 2 heavy melting, respectively.

The Navy is offering 35,000 tons of scrap and salvage material in the Aleutian islands.

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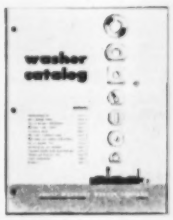

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Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Sept. 15	$29.75
Sept. 8	29.75
Aug. Avg.	28.80
Sept., 1953	36.93
Sept., 1949	26.07

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	30.00-31.00
No. 2 bundles	24.00-25.00
No. 1 busheling	29.00-30.00
Machine shop turnings	16.00-17.00
Mixed borings, turnings	16.00-17.00
Short shovel turnings	19.00-20.00
Cast iron borings	18.00-19.00
Cut structurals, 5 ft l'gths	*32.00-33.00*
Heavy turnings	26.00-27.00
Punchings & plate scrap	32.00-33.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades

No. 1 cupola	*37.00-38.00*
Charging box cast	32.00-33.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	23.00-24.00
No. 1 machinery cast	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00-33.00
Rails, 2-ft and under	43.00-44.00
Rails, 18-in. and under	44.00-45.00
Rails, random lengths	37.00-38.00
Railroad specialties	34.00-35.00

Stainless Steel Scrap

18-8 bundles & solids	*180.00-190.00*
18-8 turnings	85.00-90.00
430 bundles & solids	65.00-70.00
430 turnings	50.00-52.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	28.00-29.00
No. 2 bundles	23.00-24.00
No. 1 busheling	28.00-29.00
Machine shop turnings	12.00-13.00
Mixed borings, turnings	16.00-17.00
Short shovel turnings	16.00-17.00
Cast iron borings	16.00-17.00
Low phos.	30.00-31.00
Cut structural plate 2 ft and under	34.00-35.00
Alloy free, short shovel turnings	17.50-18.50
Electric furnace bundles	29.00-30.00

Cast Iron Grades

No. 1 cupola	41.00-42.00
Charging box cast	26.50-27.50
Stove plate	33.00-34.00
Heavy breakable cast	25.50-26.50
Unstripped motor blocks	25.00-26.00
Brake shoes	29.00-30.00
Clean auto cast	43.00-44.00
No. 1 wheels	35.00-36.00
Burnt cast	27.00-28.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	31.00-32.00
R.R. malleable	41.00-42.00
Rails, 3-ft and under	43.00-44.00
Rails, 18 in. and under	45.00-46.00
Rails, random lengths	40.00-41.00
Cast steel	34.00-35.00
Railroad specialties	35.00-36.00
Uncut tires	36.00-37.00
Angles, splice bars	41.00-42.00
Rails, Rerolling	45.00-46.00

Stainless Steel (F.o.b. shipping point)

18-8 bundles, solids	nom. 160.00-170.00
18-8 turnings	nom. 70.00-80.00
430 clips, bundles, solids	nom. 70.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	32.00-33.00
No. 2 bundles	23.00-24.00
Machine shop turnings	13.00-14.00
Short shovel turnings	19.00-20.00
Cast iron borings	19.00-20.00
Low phos.	33.00-34.00
Electric furnace bundles	31.00-32.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00-33.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	28.50-29.00
No. 2 heavy melting	26.50-27.00
No. 1 bundles	28.50-29.00
No. 2 bundles	22.00-22.50
No. 1 busheling	28.50-29.00*
Electric furnace bundles	29.00
Machine shop turnings	16.00-16.50
Mixed borings, turnings	16.00
Short shovel turnings	19.00-20.00
Structurals & plate	*30.00-31.00*
Heavy turnings	25.00
Couplers, springs, wheels	32.00-33.00
Rail crops, 2 ft & under	42.00-43.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Malleable	37.00*
Heavy breakable cast	36.00-36.50
Unstripped motor blocks	nom.
Drop broken machinery	41.00-42.00

*Nominal.

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	21.00-21.50
No. 2 heavy melting	18.00-19.00
No. 1 bundles	21.00-21.50
No. 2 bundles	*16.50-17.50*
Machine shop turnings	*8.00-8.50*
Mixed borings, short turnings	*11.00-12.00*
Low phos. (structural & plate)	*25.00-26.00*
Short shovel turnings	*11.00-12.00*

Cast Iron Grades

No. 1 cupola	29.00-30.00
Unsrripped motor blocks	19.00-20.00*

Stainless Steel

18-8 sheets, clips, solids	170.00-175.00
18-8 borings, turnings	70.00-75.00
430 sheets, clips, solids	40.00
410 sheets, clips, solids	30.00

*Nominal.

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*19.00-20.00**
No. 2 heavy melting	15.00-15.50
No. 1 bundles	*19.00-20.00*
No. 2 bundles	14.00-15.00
Mixed borings, turnings	*9.00-10.00*
Machine shop turnings	*5.00-5.50*
Short shovel turnings	10.00-11.00
No. 1 cast	29.00-30.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	32.00-33.00

* $4 to $4.50 higher for export.

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	25.50-26.50
No. 2 heavy melting	22.50-23.50
No. 1 bundles	25.50-26.50
No. 2 bundles	19.00-20.00
No. 1 busheling	25.50-26.50
Machine shop turnings	11.00-12.00
Mixed borings, turnings	14.50-15.50
Short shovel turnings	14.50-15.50
Cast iron borings	14.50-15.50
Low phos. 18-in.	32.00-33.00

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast	35.00
Charging box cast	36.00
Drop broken machinery	44.00

Railroad Scrap

No. 1 R.R. heavy melt.	31.00-32.00
Rails, 18-in. and under	*44.00-45.00*
Rails, random lengths	36.00-37.00

CHICAGO

No. 1 heavy melting	29.00-31.00
No. 2 heavy melting	27.00-28.00
No. 1 factory bundles	31.00-32.00
No. 1 dealer bundles	28.00-29.00
No. 2 bundles	23.00-23.00
No. 1 busheling	29.00-31.00
Machine shop turnings	14.00-15.00
Mixed borings, turnings	16.00-17.00
Short shovel turnings	16.00-17.00
Cast iron borings	16.00-17.00
Cut structurals, 3-ft	32.00-33.00
Punching & plate scrap	33.00-34.00
Electric furnace bundles	31.00-32.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Stove plate	29.00-30.00
Unstripped motor blocks	24.00-25.00
Clean auto cast	39.00-40.00
Drop broken machinery	39.00-40.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00-33.00
R.R. malleable	40.00-42.00
Rails, 2-ft. and under	45.00-46.00
Rails, 18-in. and under	46.00-47.00
Angles, splice bars	38.00-39.00
Rails, rerolling	44.00-45.00

Stainless Steel Scrap

18-8 clips & solids	130.00-140.00
18-8 turnings	60.00
430 clips & solids	40.00
430 turnings	20.00-25.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	22.50
No. 2 heavy melting	18.50
No. 1 bundles	23.50
No. 2 bundles	16.50
No. 1 busheling	21.50
Machine shop turnings	8.00
Mixed borings, turnings	8.00
Short shovel turnings	*11.00*
Punchings & plate scrap	24.00

Cast Iron Grades

No. 1 cupola	33.00
Charging box cast	27.00
Stove plate	29.00
Heavy breakable	23.00
Unstripped motor blocks	18.00
Clean auto cast	37.00
Malleable	28.00

BUFFALO

No. 1 heavy melting	*27.50-28.50*
No. 2 heavy melting	*22.50-23.50*
No. 1 bundles	*27.50-28.50*
No. 2 bundles	*20.50-21.50*
No. 1 busheling	*27.50-28.50*
Machine shop turnings	*13.50-14.50*
Mixed borings, turnings	*17.00-17.50*
Short shovel turnings	*18.00-18.50*
Cast iron borings	*17.00-17.50*
Low phos.	*30.50-31.50*

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	35.00-36.00
No. 1 machinery	39.00-40.00

Railroad Scrap

Rails, random lengths	33.00-34.00
Rails, 3-ft and under	40.00-41.00
Railroad specialties	34.50-35.50

BIRMINGHAM

No. 1 heavy melting	19.50-20.50
No. 2 heavy melting	18.50-19.50
No. 1 bundles	18.00-19.00
No. 2 bundles	16.00-17.00
Cast iron borings	15.00-16.00
Short shovel turnings	16.00-17.00
Machine shop turnings	15.00-16.00
Electric furnace bundles	26.00-27.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	43.50-44.50
Stove plate	40.50-41.50
Bar crops and plate	30.50-31.50
Structural plate 2 ft.	30.50-31.50
Unstripped motor blocks	35.00-36.00

Railroad Scrap

No. 1 R.R. heavy melt.	26.00-27.00
Rails, 18-in. and under	40.00-41.00
Rails, rerolling	39.00-40.00
Angles, splice bars	36.00-37.00
Stand. steel axles	35.00-36.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	25.50
No. 2 heavy melting	23.50
No. 1 bundles	25.50
No. 2 bundles	19.25
Machine shop turnings	14.00
Short shovel turnings	16.00

Cast Iron Grades

No. 1 cupola	*38.00*
Charging box cast	29.00
Heavy breakable cast	29.00
Unstripped motor blocks	29.00
Brake shoes	30.00
Clean auto cast	*40.00*
Stove plate	*33.00*

Railroad Scrap

No. 1 R.R. heavy melt.	32.25
Rails, 18-in. and under	41.00
Rails, random lengths	39.00
Rails, rerolling	*47.50*
Angles, splice bars	35.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	25.00
No. 2 heavy melting	21.00
No. 1 bundles	21.00
No. 2 bundles	*17.00*
No. 3 bundles	13.00
Machine shop turnings	11.50
Mixed borings, turnings	11.50
Short shovel turnings	11.50
Electric furnace, No. 1	32.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	34.00-35.00
Heavy breakable cast	23.00
Unstripped motor blocks	23.00
No. 1 wheels	21.00
Stove plate(f.o.b. plant)	28.00
Brake shoes	28.00

Railroad Scrap (Delivered consumer plant)

Rails, random lengths	30.00-34.00

LOS ANGELES

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	20.00
No. 2 bundles	16.00
Machine shop turnings	5.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	42.00-44.00

SAN FRANCISCO

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 1 busheling	20.00
Machine shop turnings	5.00
Mixed borings, turnings	5.00
Short shovel turnings	9.00
Cast iron borings	9.00
Cut structurals	25.00
Heavy turnings	9.00
Punchings & plate scrap	25.00
Electric furnace bundles	19.00

Cast Iron Grades

No. 1 cupola	43.00-46.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	43.00

HAMILTON, ONT.

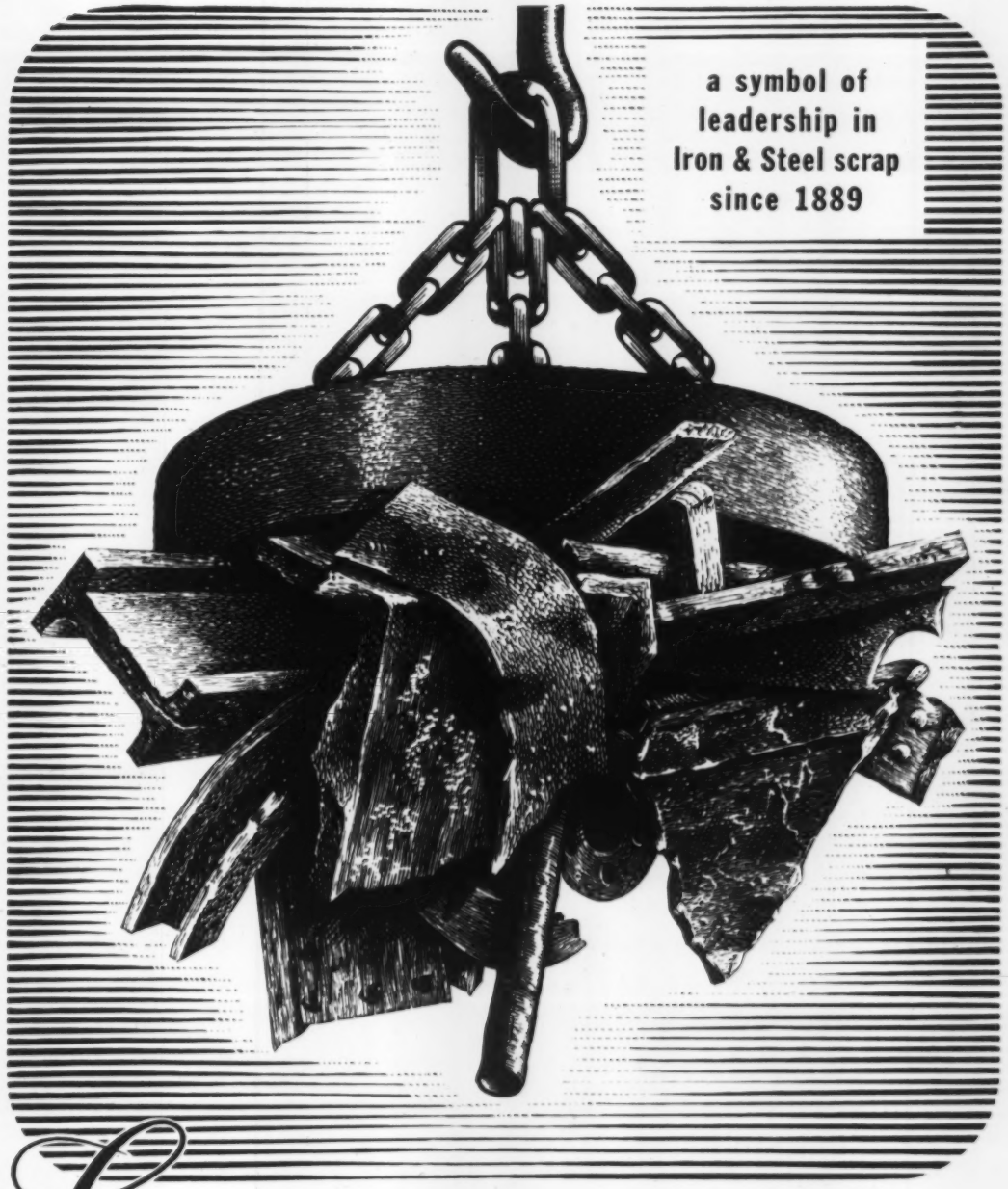
(Delivered prices)

No. 1 heavy melting	$22.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	17.00
Mixed steel scrap	16.00
Mixed borings, turnings	12.00
Rails, remelting	32.00
Busheling, new factory: Prepared	20.00
Unprepared	16.00
Short steel turnings	12.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

†F.o.b., shipping point.



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Ferroalloys . . .

Ferroalloy Prices, Page 225

Revisions in prices on some silicon alloys and special alloy products are announced by Electro Metallurgical Co., division of Union Carbide & Carbon Corp., New York.

The new prices, effective Oct. 1 for contract users and immediately on a spot basis, reflect increasing production and wage costs. (The new prices will be found on p. 225.)

Under the new schedule standard ferromanganese is quoted down ½ cent and 50 per cent ferrosilicon up 1.2 cents.

Ohio Ferro-Alloys Corp., Canton, O., also announced new lower prices on standard ferromanganese and manganese briquets, effective Sept. 1.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 227

Merchant coke producers are feeling better about the fourth quarter business picture. September volume is keeping pace with that reported in August and there are indications of spotty gains, noticeably in the Chicago area.

Iron Ore . . .

Iron Ore Prices, Page 227

Cumulative shipments of lake iron ore in the 1954 navigation season (to Sept. 13) total 46,054,704 gross tons, reports the Lake Superior Iron Ore Association. In the like period of the 1953 season 71,508,689 tons had been brought down from upper lake ports.

Warehouse . . .

Warehouse Prices, Page 217

Warehouses are getting increased competition from steel mills. It is particularly keen on cold-finished bar orders of one ton or more and hot-rolled material orders of more than three tons. Mills are booking combination orders, contributing further to the competition.

Horace T. Potts Co., Philadelphia, put in a simplified system (Sept. 14) for establishing delivered county prices in the area served in eastern Pennsylvania and southern New Jersey. It applies to prices on plates, shapes, bars, hot-rolled pickled and oiled sheets, galvanized sheets, cold-drawn bars, alloy bars and carbon seamless mechanical tubing. It does not apply to tool steel and stainless steel commodities.

The plan is similar to the delivered county pricing policy established by one of the major steel producers.

The plan calls for no change in base prices.

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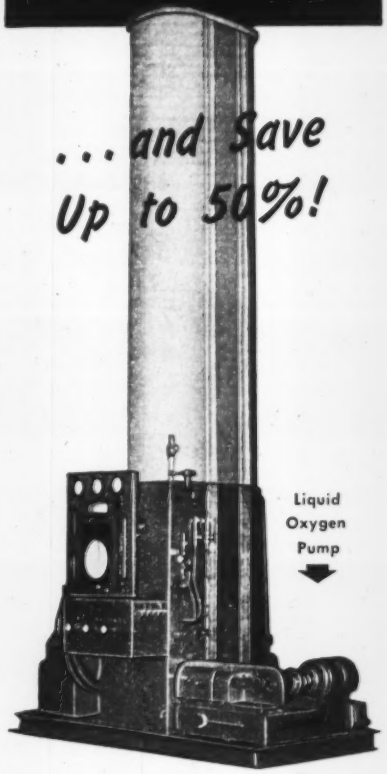

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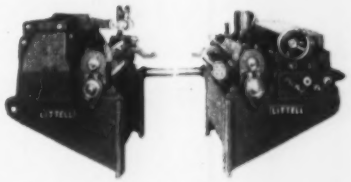

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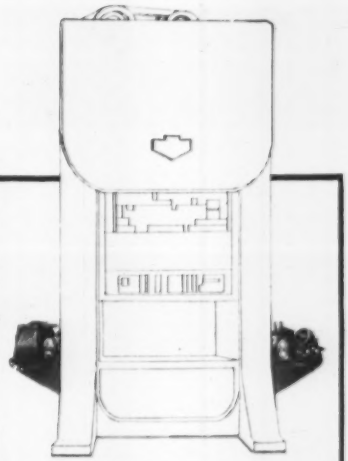

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OL 236A

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FARVAL—
Studies in Centralized Lubrication
No. 159

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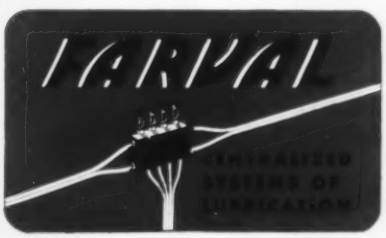

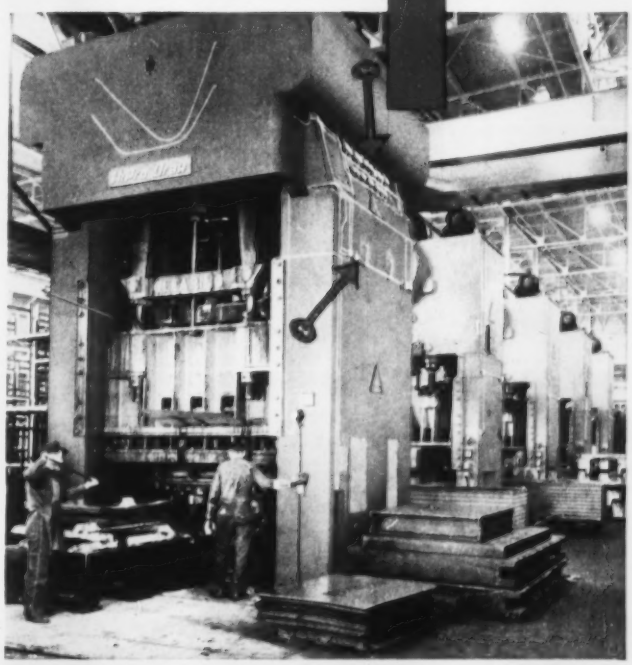

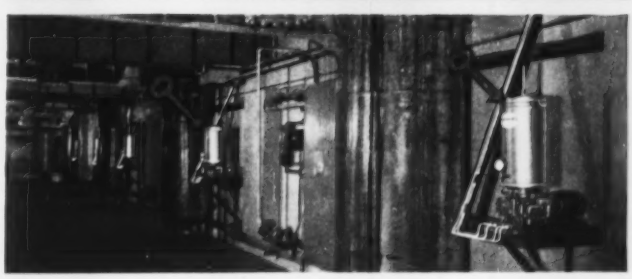

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Top and bottom: These presses in a large metalworking plant are lubricated by Farval automatic systems for which pumping stations are set up directly below them in the basement. Photos courtesy of Budd Company.

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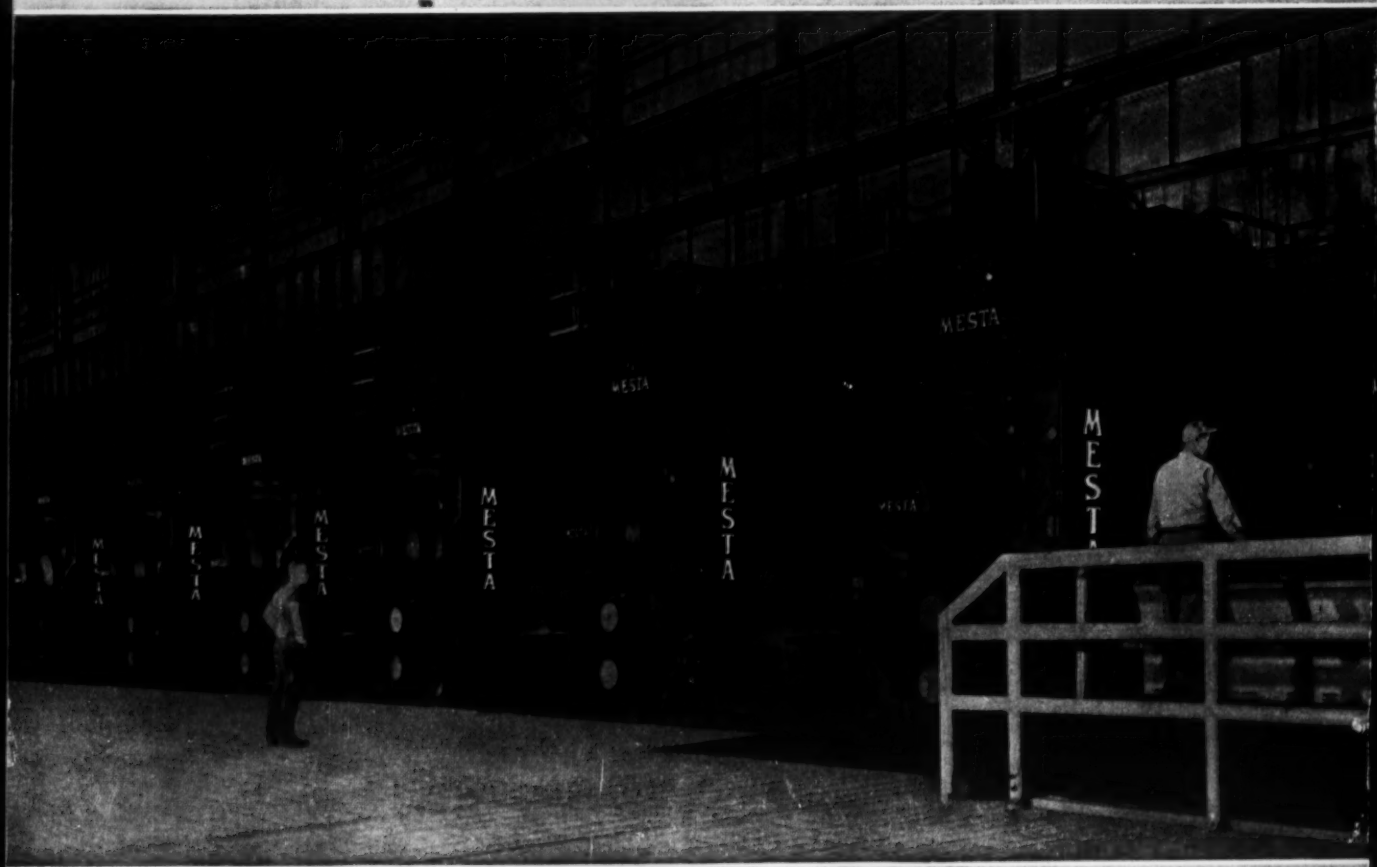

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